Eshelman

RED ROSE POULTRY FEED

feed facts *for* poultrymen

Eshelman

FEED FACTS FOR POULTRYMEN

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JOHN W. ESHELMAN & SONS

LANCASTER, PA. YORK, PA. CIRCLEVILLE, OHIO

POULTRY AND ITS IMPORTANCE

THE importance of the poultry industry can hardly be over-estimated. One of life's necessities, there are few persons who do not depend upon poultry products for some part of their daily diet. The poultryman's potential market is vast. Neighbors, friends, in fact all within reach of his farm, are potential customers; not to mention the large markets of the East.

There is probably no branch of agriculture today which, properly managed, will contribute more uniformly satisfactory returns with little investment, than poultry. Market conditions may at times reduce prices, but just as a community grows, so will the demand grow for poultry products. And regardless of prices, these products can nearly always be produced at a profit when the flock has been built up from a reliable strain and breed; and when it has been properly culled and cared for, and fed economical Poultry Feeds.

If poultry is managed on a common-sense basis, profits may be derived from a variety of sources, many of them overlooked by the average poultryman:

1. Sale of eggs and poultry meat.
2. Sale of birds which have outlived their egg-producing usefulness.
3. Sale of culls.
4. Sale of eggs for hatching (if the flock is a high producing one).

Cockerels, capons, and custom hatching for others, also contribute their share of profit. Many a losing poultry business has been made profitable by selling properly fed and fattened cockerels as broilers, and by caponizing a percentage of them.

BREED TO SELECT

IN a broad sense, poultry may be divided into three general classes: *Egg Breeds* such as Leghorns, *Meat Breeds* such as Brahmas, and *Dual Purpose Breeds* such as the Wyandottes. Dependable breeds and strains, in each of these classifications, are available to the poultryman—enough of a variety to afford the poultryman choice of a breed that will adequately meet his market requirements.

Cross-breds have also contributed their share to the efficiency of the poultry industry. Where the main object is broilers, for example, many experienced poultrymen use Hybred Chicks (sometimes called sex-linked chicks or cross-breeds) to breed into the flock, desirable characteristics, and out of the flock, characteristics that are undesirable. Crossing two distinct breeds makes it possible, quite frequently, to determine the sex of the chicks at hatching time, by means of plumage, feathering, and other details.

Only after careful consideration of all factors involved should the poultryman select the breed. Some breeds make gains more rapidly than others, but as the size of the bird increases, so also does the cost of maintenance. Obviously, there is no "best breed" of poultry. Study your market requirements and select the breed to fit. But, be sure to select a healthy, vigorous strain, since this is of such major importance as to make or break the business.

POULTRY BREEDS

THE poultry industry is concerned with keeping chickens for producing either eggs or meat or both. The breeds and varieties described below include most of the chickens used for that purpose.

MEAT AND EGG PRODUCERS—AMERICAN CLASS:

BREED	VARIETY
Plymouth Rock	Barred, White, Buff, Silver Pencilled, Partridge, Columbian, Blue
Wyandotte	White, Buff, Silver Laced, Golden Laced, Partridge, Silver Pencilled, Columbian, Black
Rhode Island Red	Single Comb, Rose Comb
Rhode Island White	Rose Comb

Jersey Black Giant; Java (Black, Mottled); Dominique, Buckeye, Chantecler

All birds belonging to the American Class are clean-legged; shanks are free from feathers. Except the Rhode Island Red, Java and Jersey Black Giant, all have yellow beaks, shanks, and skin. All of the American Class birds have red ear lobes, lay brown-shelled eggs, and are classed as broody.

AMERICAN CLASS	STANDARD WEIGHT IN POUNDS			
BREED	COCK	HEN	COCKEREL	PULLET
Plymouth Rock	9½	7½	8	6
Wyandotte	8½	6½	7½	5½
Rhode Island Red	8½	6½	7½	5½
Jersey Black Giant	13	10	11	8

MEAT AND EGG PRODUCERS—ASIATIC CLASS:

Brahma (Light, Dark Buff), Cochin (Buff, Partridge, White, Black), and Langshan (Black, White). These breeds have large bodies, feathered shanks, and are usually heavy in bone. All have yellow skin except the Black Langshan, whose skin is pinkish white. All have red ear lobes, lay brown-shelled eggs, and are classed as broody.

ASIATIC CLASS	STANDARD WEIGHT IN POUNDS			
BREED	COCK	HEN	COCKEREL	PULLET
Brahma (Light)	12	9½	10	8
Brahma (Dark Buff)	11	8½	9	7
Cochin	11	8½	9	7
Langshan	9½	7½	8	6½

POULTRY BREEDS

MEAT AND EGG PRODUCERS—English Class:

Orpington (Buff, Black, White, Blue), Cornish (Dark, White, White-Laced Red), Dorking (White, Silver-Gray, Colored), Sussex (Speckled, Red, Light), Red Cap and Australorp (developed from the Black Orpington).

All of these breeds are of good size and noted for excellent fleshing properties. With the exception of the Cornish, all have white skin and red ear lobes. All are broody and all except the Dorking and the Red Cap lay brown-shelled eggs.

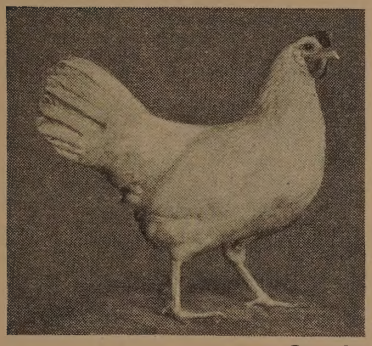
English Class	Standard Weight in Pounds			
BREED	COCK	HEN	COCKEREL	PULLET
Orpington	10	8	8½	7
Cornish (Dark, White)	10	7½	8	6
Cornish (White-Laced Red)	8	6	7	5
Dorking, White	7½	6	6½	5
Dorking (Silver-Gray and Colored)	9	7	8	6
Sussex	9	7	7½	6
Australorp	8½	6½	7½	5½

EGG PRODUCERS—Mediterranean Class:

Leghorn (12 varieties), Ancona (Single-Comb, Rose-Comb), Minorca (5 varieties), Spanish, Blue Andalusian, and Buttercup. These breeds are smaller than those in the other classes and are kept for egg-production rather than meat. All the Mediterranean breeds are classed as non-broody, all are clean-legged, have white or creamy-white ear lobes, and lay white-shelled eggs.

Mediterranean Class	Standard Weight in Pounds			
BREED	COCK	HEN	COCKEREL	PULLET
Leghorn	6	4½	5	4
Ancona	6	4½	5	4
Minorca (S. C. Black)	9	7½	7½	6½
Minorca (Others)	8	6½	6½	5½

BREEDS OF POULTRY

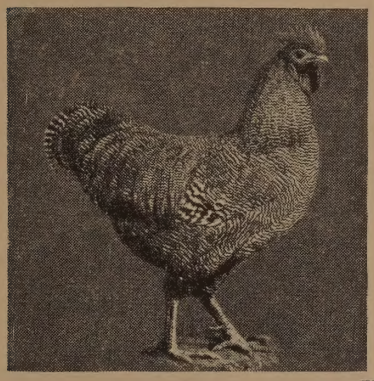


S. C. White Leghorn

White throughout; no brassiness or creaminess. Beak, skin, shanks, and toes, yellow. Single comb, free from wrinkles, "thumb-marks," or folds. In female, front of first point erect; remainder of comb drooping. Tail, carried at 40° angle above horizontal.

S. C. Dark Brown Leghorn

In the female, the breast is dark reddish salmon, stippled with brown. Wings and back should be black, stippled with a darker brown. There should be no shafting, but plumage should show greenish sheen free from purple. Undercolor slate black.

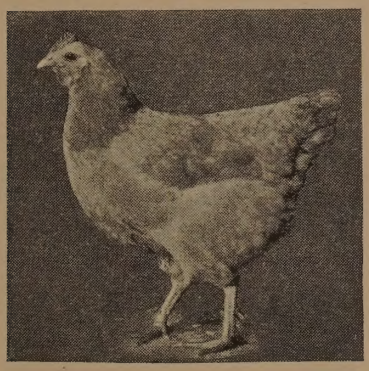


Barred Plymouth Rock

Grayish white plumage; feathers crossed by almost black bars, even in width, straight; extending down to the skin. Black spots on shanks do not indicate impurity of breeding.

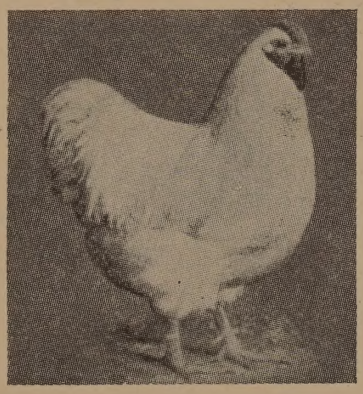
White Plymouth Rock

Pure white throughout. Should be free from black ticking, brassiness and creaminess. All Plymouth Rocks are long-bodied, with fairly prominent breast and good depth of body.



Buff Plymouth Rock

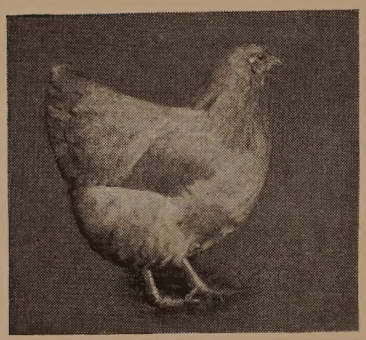
An even golden buff in all parts of surface color. Feathers with different colored shafts and those sprinkled with lighter color are common but undesirable. Undercolor is a little lighter than the surface.



White Wyandotte

All Wyandottes have bodies comparatively round; shape and feathering make it appear low-set with rather short back. The White Wyandotte is white throughout; without brassiness, creaminess or black ticking.

BREEDS OF POULTRY

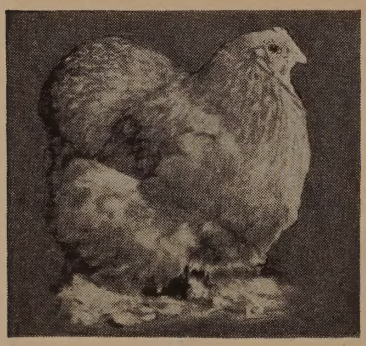


Buff Wyandotte

Like all birds of this breed the Buff Wyandotte is a good general-purpose breed well adapted for flesh production and a good layer when bred for egg production. It is an even shade of buff throughout.

Silver-Laced Wyandotte

The female has white feathers laced with black over the entire body, except neck feathers which are black, laced with white; also some black in the wings. Both sexes have slate undercolor.

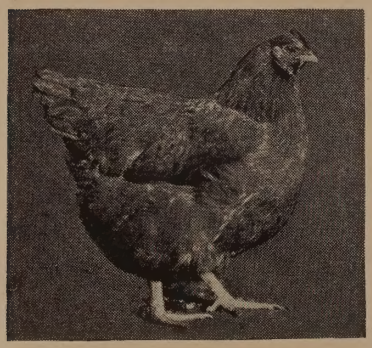


Buff Cochin

An even shade of golden buff in all sections of surface; undercolor lighter buff but also even in shade. Feathers with different colored shafts and feathers sprinkled with lighter color are undesirable.

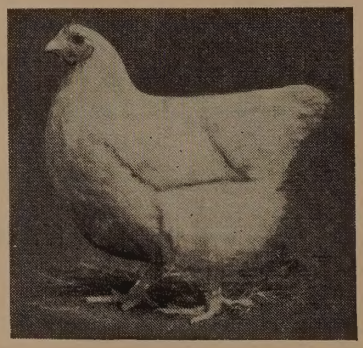
White Cochin

Pure white throughout, free from any foreign color. Beak, shanks and toes are yellow. All Cochins are massive in appearance and have abundantly feathered shanks. All have single combs.



Buff Orpington

Even shade of rich golden buff throughout surface; undercolor is a lighter but even shade of buff. Shanks and toes are pinkish white. This breed makes good table birds and good laying strains have been developed when so bred.



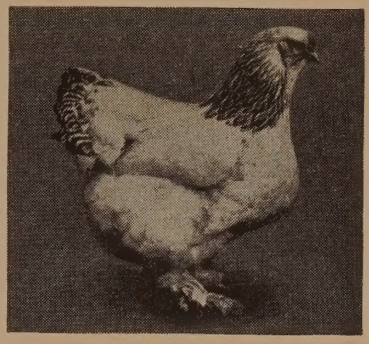
White Orpington

Pure white throughout. No indication of brassiness or creaminess in either surface or undercolor. All Orpingtons have long, deep, well-rounded bodies with full breast and broad back. Rather low-set and heavy in bone.

BREEDS OF POULTRY

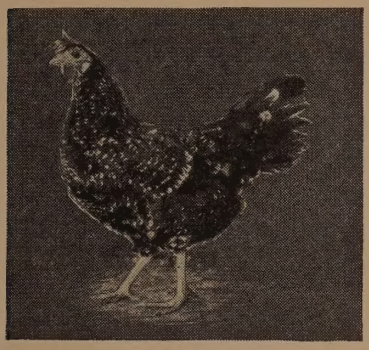
Rhode Island Red

Rather long, rectangular body; good depth and length. Rich brilliant red plumage; even as possible over entire surface except lower webs of primaries (mostly black), upper webs of secondaries (partly black), main tail feathers (black).



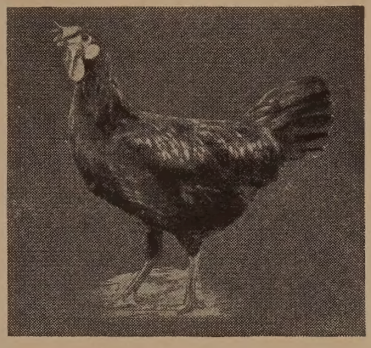
Light Brahma

In general, white in plumage color; hackle feathers black and narrow edging of white; main tail feathers black; small tail coverts black with distinct white lacing. Undercolor light bluish-slate. Beak, shanks, toes; yellow.



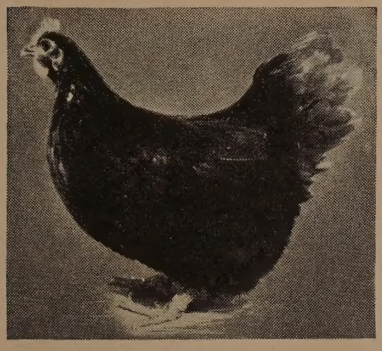
Ancona

Two varieties, single comb and rose comb, identical in every respect except in shape of comb. Plumage color is a lustrous greenish black with certain feathers having a V-shaped white tip. Main tail feathers of female tipped with white. Undercolor, dark slate.



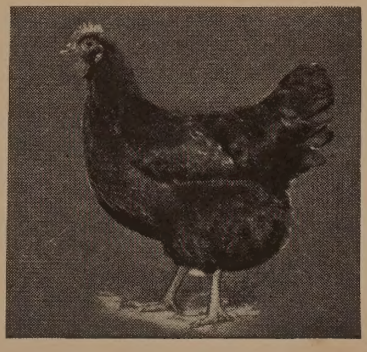
S. C. Black Minorca

Black, with lustrous greenish sheen over surface; free from purple barring. Undercolor, dull black. Beak, black; toes and shanks, dark slate. Minorcas are noted for length of body, large comb and long wattles. Breast prominent and well rounded. The skin of all Minorcas is white.



Australorp

Has the lustrous black plumage color of the Black Orpington, from which breed it was developed. Smaller, more tightly feathered and has been bred as an egg producer. Rather long back and good body depth. The black is the only variety.



Jersey Black Giant

Largest of the American breeds. Plumage black with greenish sheen. Undercolor slate, approaching white at the skin. Beak, black shading to yellow toward tip. Shanks black, with yellow on under surface of feet and toes.

SANITATION

No single factor contributes more directly to the success or failure of the poultryman than sanitation—*or the lack of it!* Many losses in the poultry business can be turned into profit by using simple clean-up and sanitary measures. It is a well known fact that carriers of diseases common to poultry, flourish when sanitation is lacking, and once these hosts gain a foothold in the flock they are hard to control. *Prevention* is the practical solution to this problem. A recent test by a large State Experimental Station proved that simple clean-up measures lowered the death loss from 42 per cent. to 7 per cent.

HOW TO PREVENT DISEASE

Precautionary methods will do much to keep birds healthy. Infections gain entrance through new birds from infected flocks, exposure at poultry shows, or contact with diseased fowls. Remove from the flock birds of low vitality. Infections may be carried on the shoes of the feeder, or the feet of animals. Even free-flying birds have been offenders. One of our customers who raised 100% of his chicks three consecutive years with no mortality, attributes his success largely to the use of 10 or more layers of newspaper on the brooder-house floor for the first ten days, instead of litter. As the top layers of newspaper become damp or contaminated, they are removed.

SUGGESTED *Clean-Up* PROGRAM

1. Prevent crowding. Provide roomy, draft-proof quarters, clean feed and water (and then keep them clean). Plenty of direct sunshine.
2. Remove filth and manure regularly. Poultry manure should be kept beyond the reach of all old or young birds.
3. Avoid feeding small chicks on the same ground every year.
4. Scrub interiors, all feed hoppers, and drinking vessels, using scalding lye water (1 pound lye to 5 gallons of water), and then apply a standard poultry disinfectant.
5. Use insecticides to keep down lice and mites.
6. Use disinfectants to destroy bacteria.
7. New birds, or birds returned from shows, should be quarantined for at least ten days to bring out any disease which may have been contracted.

CONTROL OF WORMS

It is far more practical and less costly to prevent worms, than to eliminate them once they are present in the flock. The following suggestions will prove effective in any worm-control program: (*See Page 53.*)

1. Rotation of Ranges.
2. Provide good soil drainage; eliminate wet spots.
3. Keep manure away from range; keep chicks from scratching in droppings.
4. Feed from hoppers only.
5. Clean and disinfect brooder houses monthly.

SUGGESTED PROGRAM *for controlling spread of* INFECTION

1. Separate all sick and healthy birds at once. Not just a wire-fence division; get the sick birds far enough from the flock to prevent any possible contact or contamination.
2. Fatten and market all birds "cured" of an ailment; never put them back into the flock.
3. Houses, feeding, drinking utensils, and all equipment must be cleaned and disinfected at once.
4. One-third teaspoonful of permanganate of potash to one gallon of drinking water (or Iodine Vermicide according to directions), will prevent further spread of disease through this medium, provided the drug is not weakened by gross pollution of the water with organic matter.
5. Dose the entire flock with Epsom Salt at the rate of one-half teaspoonful to each adult fowl.

DISINFECTANTS AND THEIR APPLICATION

Good disinfectants destroy germs of contagious diseases, external parasites such as lice and mites, and in some cases the eggs of parasitic worms. Clean the premises carefully before disinfectants are applied. They cannot be depended upon to penetrate hardened droppings and accumulated filth. Disinfectants should be applied to the interior of houses and worked into all cracks and crevices. Spread them over the ceiling, walls and floor, roosts, dropping boards and nest boxes. Apparatus for this need not be expensive. A hand spray or small bucket spray pump which permits disinfectants to be forced into all cracks, is better than the broom or brush method. Whatever the means of application, soak every nook and corner; *be thorough.*

Feeding and drinking vessels should be disinfected regularly by pouring boiling water into them, and drying in the sun when possible. Heating methods as applied by blow-torches have their advantages, provided the manufacturer's directions are followed and precautions taken to prevent fire.

CONTROL OF MITES

Carbolineum applied around dropping-boards and roosts by means of a paint brush is a most effective precaution against blood-suckers or mites. One application every second season will suffice. Usually the best time for application is when you are cleaning the premises preparatory to housing pullets. Carbolineum is a skin-irritant and should be applied very carefully. Gloves should be worn and splashing avoided. A week to ten days' time should elapse after Carbolineum is applied, before the birds are put into the house.

CONTROL OF BODY AND HEAD LICE

Sodium Fluoride, Blue Ointment, or Black Leaf "40" are most widely used to control these pests. Directions for application may be procured either from the manufacturer or from your State Experiment Station. Disinfection of soil in poultry runs is not entirely practicable, but when runs are heavily contaminated, added protection can be given the flock by scaling off the surface, liming it, then plowing it under fairly deep.

THE CHICK

THE most profitable combination for a laying flock is one-third old hens and two-thirds pullets. To maintain this ratio the poultryman must either hatch eggs or purchase chicks each spring, in order to have the pullets in the fall. Early hatched chicks pay better than those hatched later in the spring because they are less susceptible to disease; have a better chance for growth before they start laying, and produce eggs earlier in the fall when prices are good. There are three ways to start chicks: Natural Incubation with hens; Artificial Incubation, and Purchasing chicks from a reliable hatchery.

NATURAL INCUBATION

EXCEPT where only a few chicks are required the use of setting hens is not advisable. While it is true that the hen acts as both incubator and brooder and makes special equipment unnecessary, she has many drawbacks such as uncertainty as to when and for how long she will be broody, and the danger of transmitting worms and disease to her chicks. It is impractical to try to hatch and rear a large number of chicks with hens since the work can be done cheaper and better, artificially.

ARTIFICIAL INCUBATION

WITH fire or fermenting manure as a source of heat, artificial incubation has been practiced for centuries in Egypt and China. The modern incubator heated with lamps or hot water, and the electric incubator, are fairly recent inventions which, with the colony brooder stove, have helped the poultry business to reach its present great size. Ranging in size from 60 to 480 egg-capacity, individual incubators make it possible to hatch large numbers of chicks at any time of the year without the risk of vermin or disease. In buying an incubator, be sure to deal with a reliable firm and carefully follow their directions, since the method of operation differs with various types of equipment. In buying a second-hand incubator, write the maker for directions, which will be sent free.

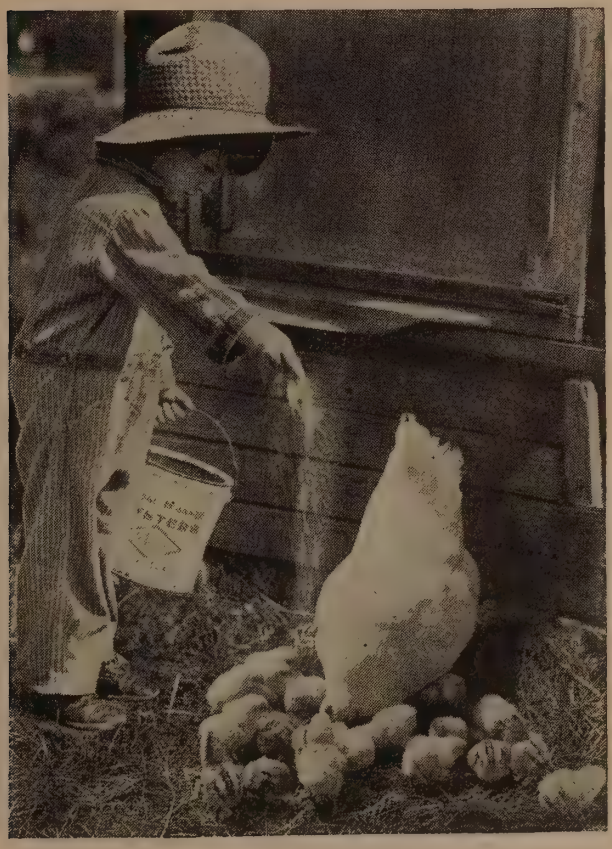
A Group of White Plymouth Rocks

THE PURCHASE *of* CHICKS

THE commercial hatchery and baby chick business is a specialized branch of the poultry industry which takes the whole work of incubation off the poultryman's hands. These hatcheries, distributed all through the country, are equipped with mammoth incubators ranging from 1500 to 50,000 capacity, many of the larger plants producing several million chicks annually.

They are run by experts who have reduced the art of incubation to a science, and poultrymen as a rule find that purchasing baby chicks from a reliable hatchery is the best way to get started. In addition to the actual work of hatching, many of these establishments conduct breeding farms where high laying strains of poultry are developed, so that the poultryman can buy better chicks than he can produce. Some of these plants are under State supervision for blood-testing breeders. Infected birds are destroyed so that chicks from these flocks will be free from this disease.

While chicks can be shipped long distances safely, it is best to deal with the nearest hatchery that meets your requirements. A fair price should be paid for chicks, since cheap chicks are a poor investment. The few cents difference in cost will be made up several times when the pullets begin to lay. The wise poultryman will buy only blood-tested quality chicks from a reliable breeder or hatchery with a reputation for fair dealing, supplying chicks from stock that adheres closely to breed characteristics and from a strain of good record.



The best period for starting chicks is from March 15th to May 15th for Leghorns, and a month earlier for the slower maturing heavy breeds. Chicks hatched between these dates develop better than late hatched chicks and mature before cold weather in time to lay high priced eggs in the fall and early winter. Since the demand for chicks is heaviest during the early spring months, it is advisable to place the order early to avoid disappointment.

When purchasing chicks, it is usually best to get them all at the same time, because a flock all the same age is easier to care for than a flock of mixed ages.

The flock owner can have eggs from his own flock custom-hatched by his nearest hatchery, if he prefers.

MAKING ESTIMATES

IT is quite possible to count your chickens before they are hatched by making estimates from averages obtained by poultrymen in hatching eggs and brooding chicks. The wise planner is over-pessimistic, rather than optimistic.

To build up a laying flock, enough extra chicks should be provided to replace the culls and cockerels which will later be eliminated. The wise poultryman will start at least 300 *good* chicks for every 100 layers he expects to house in the Fall.

HANDLING BABY CHICKS

POULTRY investigations and experiments are being conducted continuously, and some of the results obtained discredit many of our time honored and cherished theories. One of these is, that it is not necessary to starve chicks so long as was once thought advisable; some recommend feeding as soon as the chicks are taken from the incubator or shipping crates. In view of this new information it is probably best to begin feeding within 24 hours after hatching (see Complete Eshelman Feeding Schedule, page 39). If the chicks have been hatched at home the unhatched eggs and shells should be removed from the machine. Place the chicks on the nursery tray, and cover the glass front of the machine so that they will not crowd toward the light. If the chicks have been purchased from a hatchery, it is best to leave them in the shipping boxes, in a comfortable, darkened room free from drafts, but not in a heated brooder house which will be too warm and will overheat the chicks.

A Group of Strong Chicks

STARTING *Chicks*

GETTING the chicks off to a successful start is of extreme importance, since feeding and care during the first few days largely determines the future of the flock. Before placing the chicks under the brooder, the founts should be filled with clean sour liquid milk or condensed buttermilk diluted with seven parts of lukewarm water. The lactic acid contained in the milk acts as an intestinal antiseptic and serves to prevent digestive disorders. It is a good plan to dip each chick's beak in the milk to make sure that it has a swallow of the liquid before it has anything else. At 24 hours the chick should be given a light feeding of Eshelman Red Rose Starting Feed, and from then at three-hour intervals for the first four or five days. A small quantity of chick size grit may be mixed with the starter for the first three feedings. From fourth to seventh days five feedings daily, or feed continuously from hoppers. The first day they may have all the sour milk or buttermilk they will drink, after which they should have clean fresh water constantly. It is dangerous to give chicks grit before the first feeding, because they may eat so much of it as to clog up the digestive system; the results will be fatal.

Eshelman RED ROSE *Starting Feeds*

LONG experience in compounding poultry feeds, based on scientific knowledge of the chick's requirements and proved by feeding experiments on commercial flocks, have enabled John W. Eshelman & Sons to produce three Starters, each built to meet a specific purpose, each suited to the delicate digestion of the chick, insuring proper growth, and guarding against disorders often prevalent at this stage. Proper combinations of the following ingredients are used to build Red Rose Starting Feeds:

KILN-DRIED CORN MEAL. Valuable as a source of energy and for its content of Vitamin A.

OAT MEAL. Palatable, rich in vegetable protein. A good flesh builder.

MEAT SCRAP. Source of animal protein necessary to growth.

ALFALFA MEAL—ALFALFA LEAF MEAL. Used for their protein and vitamin content; rich in lime.

O. P. LINSEED OIL MEAL. Important source of vegetable protein. Valuable as a laxative.

PULVERIZED OATS. Source of great energy.

BUTTERMILK. Furnishes needed animal proteins. Reliable source of vitamins, enzymes, and lactic acid, essential for digestive and intestinal well-being.

DRIED WHEY. Excellent source of animal protein and milk sugar. Rich in Vitamin G.

WHEAT MIDDLINGS. Rich in protein and phosphorus. Provides bulk.

WHEAT BRAN. Used for its protein, phosphorus and laxative properties. Builds muscle and bone without fattening.

FISH MEAL. Increases palatability; adds proteins and minerals derived from sea-water, including traces of Iodine.

SOYBEAN OIL MEAL. Dependable source of vegetable protein.

BONE MEAL. Supplies calcium and phosphorus, essential for bone building.

CALCIUM CARBONATE. Furnishes lime and necessary mineral elements.

FORTIFIED COD LIVER OIL. Preventative of rickets.

SALT. Acts as an appetizer and meets the Sodium requirements of the birds.

Eshelman RED ROSE *Chick Starter*

WITH COD LIVER OIL

(Guaranteed Analysis: Protein, 17½%; Fat, 4%; Fibre, 6%; Carbohydrates, 60%.)

Made from: Pure Oat Meal, Kiln Dried Corn Meal, Wheat Bran, Wheat Middlings, Alfalfa Leaf Meal, Dried Buttermilk, Dried Whey, Soybean Oil Meal, Fish Meal, O. P. Oil Meal, Bone Meal, Calcium Carbonate, Fortified Cod Liver Oil, and Salt.

ONE of the old-reliables in the Eshelman line. Built for feeding in conjunction with Red Rose Chick Grains, this dependable Starting Feed contains 32% Oat Meal, Buttermilk, and Fish Meal, plus a variety of feeding materials that are acknowledged by every poultryman to be ideally suited to the delicate digestive organs of the chick, and to effectively guard against physical disorders. For poultrymen preferring the Mash and Grain system of feeding, Red Rose Chick Starter will build the solid physical foundation for future productivity in laying hens, and for tender, meaty table birds, as well.

Eshelman RED ROSE *All-Mash Starter*

WITH COD LIVER OIL

(Guaranteed Analysis: Protein, 16%; Fat, 4%; Fibre, 6½%; Carbohydrates 55%.)

Made from: Corn Meal, Wheat Bran, Wheat Middlings, Pure Oat Meal, Meat Scrap, Fish Meal, Soybean Oil Meal, Alfalfa Leaf Meal, Dried Buttermilk, Dried Whey, O. P. Oil Meal, Calcium Carbonate, Bone Meal, Salt, and Fortified Cod Liver Oil.

THE correct feed for battery birds and broilers, and an economical starting feed for range birds where an all-mash feed is desired. Here's a feed of proven quality, with a large following among poultrymen because they know that perfect nutrition, palatability and digestibility, *built right into the feed,* are only a few of its advantages. For good results, feed alone, or in conjunction with Red Rose Chick Grains if you prefer.

Eshelman RED ROSE *All-Mash Starter & Grower*

WITH COD LIVER OIL

(Guaranteed Analysis: Protein, 16%; Fat, 4%; Fibre, 6½%; Carbohydrates, 55%.)

Made from: Wheat Middlings, Corn Meal, Wheat Bran, Pulverized Oats, Soybean Oil Meal, Pure Oat Meal, Meat Scrap, Fish Meal, Fine Alfalfa Meal, Alfalfa Leaf Meal, Dried Buttermilk, Dried Whey, O. P. Oil Meal, Calcium Carbonate, Bone Meal, Salt, Fortified Cod Liver Oil.

INTO Red Rose All-Mash Starter & Grower go all of the advantages of both Chick Starter and Growing Mash, perfectly balanced into one big, dependable ration that will build husky, rugged, vital chicks. Then, after they've reached the pullet stage, *the same feed* will bring them to maturity rapidly, with strong frames and muscular development, and ready for a long, profitable egg-laying career. If you want to instill growthiness and vitality into your birds, with a minimum of labor and expense, you'll appreciate Red Rose All-Mash Starter & Grower.

Eshelman RED ROSE *Chick Grains*

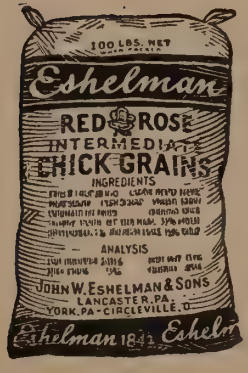
As a supplement to Red Rose Starting Feeds, Eshelman Red Rose Chick Grains may be fed after the first week, feeding a quantity that will be consumed in twenty or thirty minutes, three times a day. It is recommended that the Chick Grains be fed on trays rather than in the litter, for sanitary reasons. Unconsumed grain, if allowed to remain in the litter, may become moldy and a source of danger as a cause of digestive disorders. Eshelman Red Rose Chick Grains is composed of Fine Cracked Corn, Cracked Wheat, Cracked Kaffir Corn, Oat Groats, and Millet, affording a wide variety of grains relished by the chick.

(Guaranteed Analysis: Protein, 10%; Fat, 3%; Fiber, 3%; Carbohydrates, 65%)

Do Your Chickens Average These Gains?

The Kentucky College of Agriculture, through many years of experimenting, has worked out a table showing the average weight of chicks at different ages of their life, and the amount of feed consumed during each respective week of this age. The table at right shows the work on light and general purpose breeds. Males removed twelfth week.

If you do not average or better these gains, try a 100% Eshelman feeding program.



Age Weeks	LIGHT BREEDS Av. Wt. Per Chick Lbs.	LIGHT BREEDS Feed Consumed Lbs.	ALL-PURPOSE BREEDS Av. Wt. Per Chick Lbs.	ALL-PURPOSE BREEDS Feed Consumed Lbs.
1	.12	.08	.11	.09
2	.18	.16	.16	.18
3	.26	.26	.26	.25
4	.38	.35	.36	.33
5	.48	.44	.53	.47
6	.65	.52	.72	.64
7	.83	.69	.96	.72
8	1.02	.85	1.22	.90
10	1.29	.95	1.78	1.07
12	1.60	1.00	2.28	1.19
16	2.12	1.20	2.91	1.40
20	2.68	1.61	3.68	1.70
24	3.15	1.56	4.30	1.78

Average total feed consumption per chick up to 24 weeks of age was 23.37 pounds for the light breeds and 26.33 pounds for the heavy breeds.

Feeding Schedule — *For complete, detailed information on feeding, see COMPLETE FEEDING SCHEDULE (page 39).*

THE VITAMINS

VITAMINS, produced chiefly by plants, are food substances of great importance to health and nutrition, and to the regulation of many vital processes of the birds' organism. Although the Vitamins are far different from the Proteins, Fats, and Carbohydrates in nature and effect, they are nevertheless of inestimable importance. Six are usually recognized.

The Eshelman feeder need not worry about feeding Vitamins. Careful study of the following data, and an examination and trial of RED ROSE POULTRY FEEDS, will show these Vitamins to be present in every pound.

***Vitamin* A** aids growth and promotes health; prevents so-called nutritional roup, which affects the eyes, sinuses, nasal passages, and throat. This Vitamin is abundant in Cod Liver Oil, yellow corn, green forage crops such as alfalfa, and most of the yellow and leafy green vegetables.

***Vitamin* B** necessary for growth and for the maintenance of health and life at all ages. Essential for protection against a nervous disorder known as Polyneuritis. Weakening or impairment of digestion and reproduction, and degenerative changes in the nervous system are attributed to a deficiency of this Vitamin. Present in abundant quantities in whole cereals, seeds, alfalfa, and most greens.

***Vitamin* C** known as the "anti-scorbutic" Vitamin. Need cause the poultryman little concern. It may be presumed that chickens require it, but they seem amply able to manufacture all they require of it.

***Vitamin* D** promotes absorption and assimilation of calcium and phosphorus, which directly increases egg production, hatchability, improves egg shell strength, and prevents rickets. *Direct* sunlight, through open windows or windows which transmit the ultra-violet rays of the sun, is the best known source. Good Cod Liver Oil, light from an ultra-violet lamp or Mazda CX bulb, and Vitamin D concentrates are also good sources.

Because of the great importance of this vitamin to flock health and egg-production, the poultryman should make absolutely sure that his flock gets enough of it by using Eshelman Red Rose Poultry Feeds with Cod Liver Oil.

***Vitamin* E** prevents sterility. Necessary for reproduction. Present in Corn, Wheat Germ, and some Greens. Present in ample quantities in well-balanced rations.

***Vitamin* G** apparently influences growth and hatchability, and may be a factor in prevention of Pellagra. Generally believed to be a complex of several different Vitamins. Milk abundantly supplies Vitamin G. Also present in vegetables, and beet and other greens. Knowledge of this Vitamin is none too definite.

Of all the Vitamins, Vitamin D concerns the poultryman most. It cannot be stated too frequently that there is no perfect substitute for direct sunshine. To be absolutely sure that your flock has sufficient Vitamins A and D, high-grade Cod Liver Oil is included as an ingredient of *Red Rose Chick Starter, All-Mash Starter, All-Mash Starter & Grower, Growing Mash,* and *Turkey Mashes.* Red Rose Laying Mash is available with or without Cod Liver Oil.

Some idea of the value of Cod Liver Oil in the ration may be gained from a study of the subject by Pennsylvania State College, which shows that "the additional cost for supplying extra Vitamin D is 2½ cents per hen per year. Each hen thus supplied ate slightly more feed, but stepped up her yearly production by 28 eggs. With eggs at 30 cents per dozen, the farmer received additional income of 58 cents for the added investment of 2½ cents."

INCUBATION

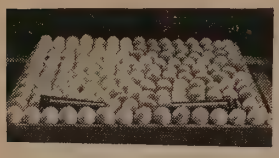
TEMPERATURE

COMPLETE instructions are supplied by the manufacturer, with each incubator, and should be available at all times when the machine is in operation.

HUMIDITY

DURING the time of incubation it is important to maintain a high degree of humidity. This can be obtained: (*a*) by wetting the floor of the incubator cellar, (*b*) by keeping trays of well moistened sand on the bottom of the incubator, and (*c*) by sprinkling eggs with luke-warm water. Any one of these methods will prove satisfactory. Eggs for hatching should be collected daily and kept in a cool place—50° to 60° F.

PLACING EGGS



Egg Tray with Thermometers

WHEN placing eggs in the incubator, cover the tray, but do not pile them on top of each other. This will make it easier to turn the eggs, and, more important, will expose them all to an even degree of temperature. If the eggs have been previously kept in a cool place they should be gradually accustomed to the heat.

Eggs that have been shipped a long distance should be allowed to stand for a few hours with the large end up before putting them in the tray. This allows the air cell to assume its normal position.

TURNING EGGS

THE brooding hen turns the eggs frequently with her body, beak and feet, thereby changing the position of the embryo so that it will not adhere to the shell and die. Turning the eggs also helps keep the air cell in the proper position, which is important in supplying the embryo with oxygen.

The best procedure is to begin on the third day to turn the eggs, once in the morning and once at night, until the first sign of pipping is noticed, usually on the twentieth day.

To turn the eggs (if a handle for this purpose is not a part of your incubator), remove about one-tenth of the eggs in the tray and roll the others with the palm of the hand. It is not necessary to turn each egg half way over.

COOLING

As the hen occasionally leaves the nest, allowing the eggs to cool, so it is necessary, especially in warm weather, to artificially cool the eggs. This not only lowers the temperature but also exposes the eggs to fresh air.

If the temperature of the room is lower than 50 degrees Fahrenheit, do not cool for any longer time than is necessary to turn the eggs. During the first week cool only the length of time necessary to turn the eggs, the second and third weeks gradually increase the cooling time until just before hatching when the eggs can be cooled from half an hour to an hour.

TESTING EGGS

Home-made Egg Tester

THE eggs should be tested on the seventh and fourteenth days. Infertile eggs are absolutely clear, while a normal egg, containing a good germ, will show a dark spot about the size of a pea with dark lines or blood vessels extending from it.

By the fourteenth day, a dead chick is shown by a dark spot attached to the shell, so that it does not move about when the egg is rotated. The dead embryo will be surrounded by a fixed red line about half an inch to one inch from it. The live germ moves when the egg is turned. At this time the air cell should be about ½ inch to ⅝ inch in depth, and in a good egg the dividing line between the air cell and the egg mass is always clear, sharp and distinct.

A home-made tester can be made from a wooden box, 8 inches wide by 18 inches long. The lid can be hinged. Set the box on end and place an ordinary kerosene lamp or light bulb inside it. Then cut a hole in one side, exactly on a level with the flame of the lamp. The hole should be a little smaller than the transverse diameter of the egg. When testing the egg, place it tight against the hole so that no light can be seen except through the egg.

PROVIDE PLENTY OF *Hopper Space*

IN raising chicks, it is desirable that they eat as much as possible in order to assure rapid and continuous growth. Growing chicks rapidly outgrow their original feeding equipment and need larger hoppers after the first few weeks. A hopper made of a 6-inch board 4 feet long, with sides made of 4-inch strips, is satisfactory at this stage. At least one inch of hopper space for each chick will not be too much. A length of hay wire tacked across the top will keep the chicks from scratching in the mash. Provide enough of these hoppers so that most of the chicks can eat at one time, and be sure that the hoppers are kept filled with an ESHELMAN RED ROSE STARTING FEED.

RANGE: Chicks up to the age of six weeks are especially susceptible to intestinal worms, and many poultrymen confine them to the brooder house up to that age, in order to keep them off infested ground containing worm eggs. However, if the range is clean, that is, if it has not been used by poultry for at least two years, the chicks may be let out whenever the weather permits. Chicks and young stock should never be allowed to run with old birds—it is an extremely dangerous practice.

THE most important factors of brooding (artificial or natural) are proper temperature, sanitation, plenty of room and good feed—these conditions will promote economical growth. Artificial methods, with heat furnished by fuel, oil, gas or electricity are considered most practical because chicks can be raised in large numbers successfully, and sanitation and uniform temperatures can be more easily controlled. All brooder houses and equipment should be disinfected before chicks are placed in brooder house, and thereafter at regular intervals.

BROODER HOUSE

10 x 12 feet

{New Jersey}

It is difficult to make an exact bill of material, as workmen differ in their methods. The house may be built of the following:

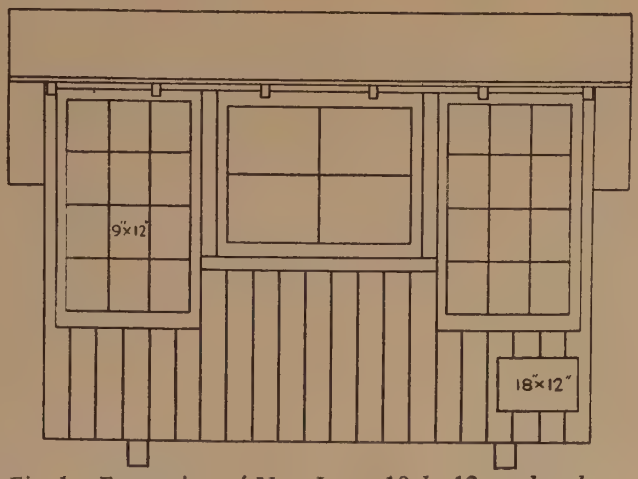


Fig. 1—Front view of New Jersey 10 by 12 poultry house. Side windows hinge inward. Middle window slides down

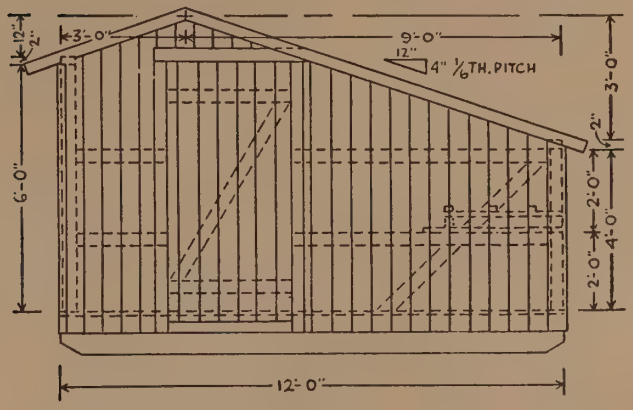


Fig. 2—Side view showing framing, roosts and dropping boards. Insulation board can be used for the siding

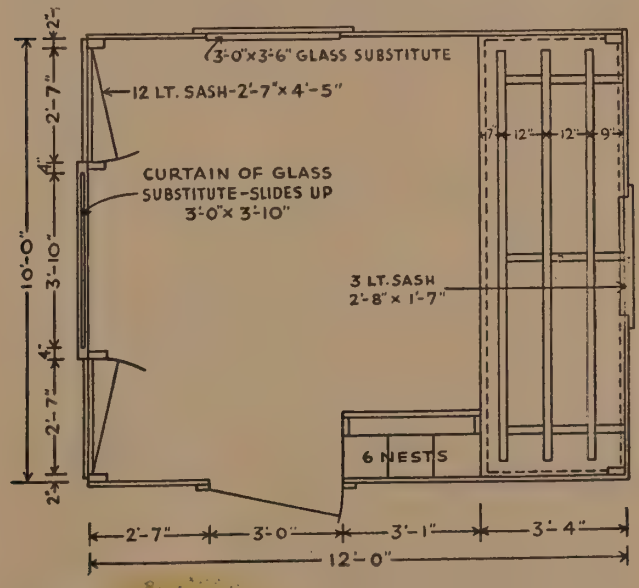


Fig. 3—Floor plan of the New Jersey house. Roosts and nests will be omitted when house is used for brooding

List of Materials

2—4" x 6" x 12'
Yellow pine—skids
14—2" x 4" x 10'
Fir—studs, plates, joist
2—2" x 4" x 12' Fir—headers
6—2" x 4" x 14' Fir—rafters
4—2" x 2" x 10' Fir—roosts
32—1" x 6" x 12' T. & G. spruce flooring, dropping boards
26—1" x 8" x 12'
Yellow pine—roofers
44—1" x 6" x 14'
T. & G. beaded white pine—siding
2—1" x 12" x 10'
White pine—nests
2—1⅛" x 2" x 12'
White pine — trim, middle front window
14—1" x 4" x 12'
White pine—trim
8—1" x 3" x 12'
White pine—trim
4—1" x 2" x 12'
White pine—trim
2—Rolls prepared roofing
2—1⅛" x 2' 7" x 4' 7"
12 light, white pine sash
1—1⅛" x 2' 8" x 1' 5"
3 light white pine cellar sash
Nails: 4 lb. 20 d common
4 lb. 10 d common
10 lb. 8 d common
15 lb. 6 d common
1 thumb latch
6—6" heavy tee hinges
1 sash pulley
1 sash weight

FLOOR PLANS, ETC., REPRODUCED THROUGH COURTESY OF EVERYBODY'S POULTRY MAGAZINE

THE LONG *Brooder House*

The Long Brooder House has some adherents especially where it must be used later for laying houses—the Colony House being scarcely deep enough or large enough for this purpose. With the Long Brooder House, however, you need better control methods, more efficient heating system and special care to prevent disease. The large number of birds running on the proportionately small range that goes with this type house, stand greater chances of infection than with Colony Houses. The latter can be strung out over a greater area as the chicks grow older, and if built on skids can be moved frequently to a new range. Whatever the type of building, at the start of each season set up the stove a day or two before moving in the chicks.

Crowding is one of the evils of poultry raising which should be guarded against at all cost. Plenty of floor space, hopper space, and drinking fountains will help prevent toe-picking, vent-picking and other forms of cannibalism. Round out all corners with small-mesh wire or roofing paper. A fence of inch-mesh wire, a foot wide, should be built around the brooder about two feet from the hover, to confine the chicks near the stove for the first two or three days. Once they learn the source of the heat, the fence can be removed.

The thermostat controlling the heat should be inspected and replaced if defective. It is important that an even temperature be maintained. For the first week the temperature should be 100 degrees, taken by placing the thermometer on the floor just under the edge of the hover. After the first week the temperature should be gradually reduced, so long as the chicks remain comfortable. The proper temperature is indicated when the chicks settle down for the night just under the edge of the hover. The house itself should be cool and well ventilated but free from drafts.

THE COLONY *Brooder House*

Of the several systems in vogue The Colony Brooder House is recommended for most feeders; 10 by 12 feet or 12 by 12 feet being the most satisfactory sizes. Equipped with a fuel-burning stove, built on skids, and moved to clean range every three or four weeks such colony houses can be kept fairly close together, facilitate handling, and lessen chances for disease. When the chicks are old enough to spend some time on the ground these houses can be pulled back and spread out over the range. A 10 by 12 foot building will safely house 300 chicks, and after the cockerels have been removed, will house the remaining pullets until maturity. Frequently small buildings around the farm can be utilized. Erected new, Colony Brooder Houses need not be costly. The above size is most practical. Smaller houses do not allow enough space away from the stove, and houses too large encourage crowding too close to the brooder.

It is always wise to break up very large flocks into units of not more than 400 chicks each. The plans illustrated here are only suggestions. Additional plans can be secured from your State Experimental Station.

LITTER

GOOD litter free of mold should be provided, or wire flooring should be used. Peat Moss is recommended, with Ground Cobs or Shavings as a second choice. Straw is third choice because it is considered to be only about 8% absorbent. Forking through the litter daily will work droppings to the bottom and keep the litter fairly safe for use as long as it remains dry. It should be changed weekly during the first three or four weeks, and the floor disinfected before clean litter is spread. This is very important. The brooder house floor soon becomes contaminated with disease germs and filth, which can spread rapidly. This table shows the amount of litter which may be required, and how long it will last:

KIND OF LITTER	DEEP	WEEKS IT WILL LAST
Straw	1½–3	2 to 4
Peat Moss	1½–4	4 to 52
Peanut Shells	2 –3	4 to 12
Shavings	2½–5	4 to 8
Oat Hulls	3 –6	3 to 6

Baby chicks often start eating the litter under their feet. To prevent this, the litter can be covered with paper or burlap sacks for the first few days. After the chicks have learned the taste of mash, they will seldom bother the litter again.

BROODER HOUSE EQUIPMENT

TWO-GALLON drinking fountains of stoneware should be provided for each house. Galvanized fountains form a poisonous compound with sour milk and are not safe. Very satisfactory troughs for early feeding can be made of six-inch boards two feet long, with plaster lath nailed around the edges to form a lip. The Iowa State College of Agriculture and Mechanic Arts recommends the following equipment for each 300 chicks, from 2 days to 12 weeks of age:

1. A warm and well-lighted brooder house with floor space of not less than 10 by 12 feet; preferably 12 by 12 feet.
2. One accurate hanging thermometer.
3. A brooder stove that will supply adequate heat and operate satisfactorily under variable weather conditions.
4. A supply of suitable litter (or provide a wire floor).
5. A 36-foot strip of 18-inch wide deadening felt or other rigid material, to be used around the hover at the start of the brooding period.
6. Six glass jar fountains for the first three weeks.
7. Six small chick hoppers for the first four weeks.
8. Six large hoppers to replace the small ones after the fourth week. Add more of these after the eighth week.
9. Three 1½-inch deep pans to replace jar fountains after the third week, and three 3-inch deep pans to use after the seventh week.
10. A small grit hopper on the wall of the house.
11. Roosts and dropping boards to put in for the chicks by the fifth or sixth week.

BATTERY BROODING

AFTER sex separation, cockerels to be marketed may be confined to batteries to relieve congestion in the brooder houses, thus affording better chance for development of the future layers. Batteries are also ideal for holding surplus chicks during the first few weeks, and to make possible the production of large numbers of chicks, and tender, well-fleshed broilers, in small space. Batteries should be as automatic as possible. Feed troughs should be spacious and well-built, allowing plenty of room for chicks to reach them from inside, and for easy cleaning from outside. Wire floors should be rigid. Only small amounts of feed should be put into hoppers at one time.

It is impossible in a booklet of this type to go into detail on the subject of battery brooding. Follow the manufacturer's directions accurately and watch such details as heat, temperature, humidity, ventilation, wire-floors, removable dropping pans, size, height and number of decks, adjustable fronts, adequate water and feed space, etc. A well-ventilated house of 350 to 400 square feet, built of double, thoroughly insulated walls (sawdust or shavings are satisfactory), can be used for as many as 3600 started chicks.

It is only fair to state that battery brooding, for some purposes at least, has its drawbacks. Rarely are the birds strong and muscular. Flabbiness and lack of vigor are common. Lack of exercise and direct sunlight take their toll in this respect, as well as in lowered resistance. Such birds are hard to handle when put into a brooder house, becoming nervous and excitable; when put on range they often fail to make gains equal to their range-reared mates. Properly balanced feeds and good management, especially on broilers, have produced excellent results with batteries; still, there is no complete substitute for direct sunshine and exercise, particularly where birds are later put into the laying flock.

NUMBER OF CHICKS *to a Battery*

MOST authorities agree that the small compartment batteries are safest. Units of 40 to 50-day-old chicks are most conveniently handled up to four weeks of age. After this age not more than about 12 chicks should be kept in each compartment.

CONFINEMENT REARING

CONFINEMENT rearing has many advantages. Many chick losses have been due to infection by intestinal parasites. The eggs pass off into the ground through the droppings of infested birds, may lie dormant from year to year but when picked up by chicks on range they almost immediately become active. When this occurs it is not long before the entire flock is infected, with devastating losses to the owner. In confinement brooding, the operator is given an excellent opportunity to prevent these losses through rigid sanitation. Labor costs under this system are not materially increased, thieving is eliminated, and infection from parasites is more easily controlled or entirely eliminated. In Pennsylvania and New Jersey, birds thus raised weighed more when matured than those raised on range, and uniform growth was easily maintained.

Under this system the following points should be observed:

1. Provide at least one square foot of floor space for every three chicks.
2. Build an outside porch, at least six to eight inches above ground level and sloped slightly toward front to allow for easy cleaning and draining.
3. All openings and the entire porch must be covered with fly-screening to eliminate tape-worn infestation. Copper screening is best.
4. Wire floors (wired frames over regular flooring) are recommended by many feeders as protection against infection. Ground or floor beneath frames should be covered with peat moss or similar material for increased sanitation.
5. Be sure to have plenty of mash hopper space (16 linear feet per 100 birds will not be too much), and plenty of drinking fountains and roosting space.
6. Furnish a moderate amount of greens such as green alfalfa, sprouted oats or tender lawn clippings, to supplement mash.
7. Avoid over-crowding the birds. At six weeks of age they will require about two square feet of floor space each.
8. Cockerels must be removed by the eighth week, or sooner.
9. Keep the house free of lice and mites, disinfect, and keep cool in summer.
10. Evils such as cannibalism can be controlled by careful handling and management. Darken the houses somewhat and keep the chicks active. The use of Iodized Salt in the drinking water (one teaspoonful to a gallon) is recommended as an added means of keeping these vices in check.

A NEW STAGE *of* DEVELOPMENT

Handling GROWING BIRDS *or* PULLETS

At the age of six to eight weeks chicks may be considered as young or growing birds.

WEANING THE CHICKS

The process of teaching the chicks to roost—reducing the temperature until they need no artificial heat—and changing from Chick Starter to Growing Mash, is known as Weaning. It is very important that it be done carefully; sudden or radical changes may cause a heavy loss.

TEMPERATURE

Temperature reduction requires careful judgment on the part of the person handling the chicks; it must be suited to the time of year. When the fires are out, it is advisable to leave the stoves in position until the weather becomes finally warm and settled. A sudden cool snap or rainy spell may require further heat for the health and comfort of the young birds.

ROOSTS

Low roosts should be provided in the brooder house. Two by two inch strips, with the top edges rounded off, make a good perch. After the young birds have learned to roost at night, danger from crowding need no longer be feared, and they will become hardened and accustomed to lower temperature.

SANITATION

As previously advised, sanitary precautions on range during the summer months, are just as important as at any other season of the year, to prevent worm infestation and disease. Houses should be moved from time to time if possible, or the ground near them may be spaded or plowed at intervals. Sometimes a double yarding system can be practiced, in which the birds have access to one yard while a green crop such as oats, is growing in the other. Dead birds should be disposed of immediately by burning or by burying them deeply (see " Sanitation," page 9).

RANGE

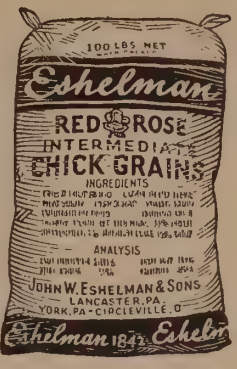
Sod or Alfalfa Ranges are the most desirable types. Shade is necessary in hot weather. For this reason an orchard or the edge of a cornfield is an ideal location. If there is no natural shade near the house, sunflowers or some quick growing tall plant can be provided, or an artificial shelter made.

At this age, or earlier with some breeds, it is possible to distinguish the sex, and when this can be done the pullets and cockerels should be separated. The cockerels are generally sold for broilers at ten or twelve weeks of age; since they are larger and stronger than the females, cockerels will crowd the females from the hoppers and thus retard their growth. The pullets are the main concern, and the object with them is to induce rapid but normal growth, in order to bring them to maturity and into production as soon as possible, without forcing. A large well-developed frame well fleshed is desired. Eshelman Feeds and Feeding Methods will produce these results.

A SUMMER SHELTER

THE wise poultryman will not overlook the value of a sensible summer shelter for his pullets. The natural advantages of the great outdoors will help the feeder do a better job of pullet rearing. An inexpensive, roomy, durable outdoor shelter furnishing shade and protection against the elements of nature, will pay particularly well, where large numbers of chicks are battery brooded, and where the chicks are crowded beyond normal roosting space. A shelter of this type should be collapsible, portable, and built in sections, both for sanitary reasons and to simplify assembling and moving.

CHANGING THE MASH



RED ROSE GROWING MASH, with Cod Liver Oil, is designed to meet the needs of the growing bird. When changing from one to the other, mix one part of Growing Mash with three parts of Starter the first week, equal parts of Starter and Growing Mash the second week, and three parts of Growing Mash to one of Starter the third week, after which Growing Mash should be fed alone. This gradual change prevents any chance of upsetting the birds, which might happen if a sudden change were made. When the birds become old enough to eat the larger size grain, feed ESHELMAN RED ROSE INTERMEDIATE CHICK GRAINS rather than ESHELMAN RED ROSE CHICK GRAINS.

RED ROSE *Growing Mash*

UNDERNOURISHED chicks are a luxury no one can afford; they require just as much time, space and investment as sturdy chicks. ESHELMAN RED ROSE GROWING MASH will help you get those sturdy chicks that mean bigger, quicker profits and healthier future flocks. Farmers and poultrymen have made records with this feed because it contains those muscle and bone-building elements which add weight quickly, and build up sturdiness and vitality as well. RED ROSE GROWING MASH is appetizing, economical, and profitable.

RED ROSE GROWING MASH contains the following ingredients: Wheat Middlings, Corn Meal, Meat Scrap, Fish Meal, Wheat Bran, Corn Gluten Feed, Pulverized Oats, Hominy Feed, Pure Oat Meal, Soybean Oil Meal, Old Process Oil Meal, Dried Buttermilk, Dried Whey, Alfalfa Meal, Calcium Carbonate, Salt, and Fortified Cod Liver Oil.

The above ingredients not already described under Red Rose Starting Feeds are described below:

CORN GLUTEN FEED. An important source of vegetable protein.

HOMINY FEED. Furnishes energy and vegetable protein.

(Guaranteed Analysis: Min. Protein, 16%; Min. Fat, 4%; Max. Fiber, 7%; Carbohydrates, 55%.)

FEEDING

GROWING birds should have a constant supply of RED ROSE GROWING MASH. It is well to construct large self-feeding outdoor hoppers for the mash, arranging an overhanging cover to protect the feed against rains. Be sure that the birds have ample hopper space. Birds stunted from lack of feed are subject to disease and never develop into good layers. A supply of oyster shell in small hoppers will help with bone development. Plenty of clean, fresh water is essential. Refrigerator pans or small iron hog troughs are satisfactory, although good commercial waterers can be purchased. RED ROSE INTERMEDIATE CHICK GRAINS should be fed in moderate amounts in the morning and fed liberally at night. It is important at this stage to watch the age and growth of birds. If they have a tendency to mature before five and one-half to six months, cut down on the Mash and increase the quantity of Scratch Grains. Supply green feed daily if the range is bare.

When pullets approach maturity, RED ROSE SCRATCH GRAINS should be substituted for RED ROSE INTERMEDIATE CHICK GRAINS.

HANDLING *Cockerels*

YOUNG cockerels that have been withdrawn from the pullet flock should be reared the same as pullets. As a rule, they are sold for broilers at ten weeks or later. It is advisable to sell them as soon as they meet market requirements, especially Leghorns, since the price drops rapidly as the season advances. Cockerels are voracious eaters, and they become a losing proposition if kept too long.

About two weeks before they are to be sold, they should be confined to a small pen and fed RED ROSE FATTENING MASH thinned with milk or water, several times a day. No further feed or water is required. They should be fed lightly for a day before the fattening mash is used. It is well to darken the house between feedings so that broilers will be quiet and put on flesh. Unconsumed feed should not be left in the pen. This fattening process will produce birds that will sell at a premium over cockerels that have not been fattened.

Cockerels to be used as breeders, or cockerels of the heavier breeds to be sold as roasters, should not undergo this fattening process but should be kept separate and treated the same as the pullets.

FATTENING

PULLETS approaching maturity—indicated by the reddening of the comb—should be put through a fattening process, for a month. Pullets which go into the laying houses in plump condition resist disease and stand heavy production better than birds not in good flesh. To fatten the birds, feed liberally with ESHELMAN RED ROSE SCRATCH GRAINS three times daily, in addition to the Growing Mash.

C A P O N S

In failing to caponize at least a number of their young cockerels, many poultrymen overlook an excellent opportunity for increasing their poultry profits. When broiler prices begin to fall off, young cockerels that are not to be used for breeding may be caponized to good advantage. There is a good market for capons; besides, caponizing makes it possible to carry these cockerels over for table poultry with less expense than would be involved if they were not caponized, and larger profits are realized.

Capons are young cockerels with the reproductive organs removed. They don't have the characteristics of cockerels since the combs and wattles do not develop. However, their flesh has a most delicious flavor and fine texture as compared with the coarse, strong flesh of the cockerel.

CHOOSE BIRDS *the Proper Size and Age*

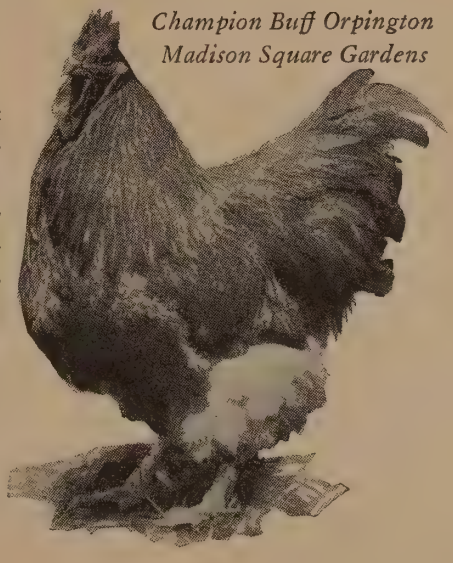
Summer Shelter

Cockerels selected for caponizing should be about eight or nine weeks old. At this age they will weigh 1½ to 2 pounds and caponizing will be a comparatively simple operation. Mortality should be very low, less than 5 per cent, if birds chosen are the proper size and age and if they have been properly cared for before and after the operation.

(Your State Department will furnish complete instructions for Caponizing.)

SELECT THE BREED *Your Market Demands*

The breed used for capons should, of course, be governed by your market demands. Some markets require capons as large as 10 pounds, and others smaller, weighing from 7 to 10 pounds. For production of large capons, such breeds as Orpingtons, Jersey Black Giants, or Light Brahmas are most satisfactory. For the smaller capon, any of the ordinary American Breeds, Rhode Island Reds, Wyandottes or Plymouth Rocks are satisfactory. It is questionable if it ever pays to caponize Leghorns since they are naturally small of stature and would make small capons; unless, of course, there is a market for capons weighing only 4 to 6 pounds.



Champion Buff Orpington
Madison Square Gardens

POULTRY HOUSE *Construction*

THE problem of correct housing is important. Unless the poultryman is operating on a very large scale there is hardly need for expensive housing equipment, yet certain fundamentals must be regarded if egg production is to be high and the flock happy and healthy. There are many types of poultry houses. Regardless of type, every poultry house should be dry, airy, convenient, sunny, free of draft and durable, allowing 4 to 6 square feet of floor space per bird for the heavier breeds and slightly less for the lighter breeds.

A HIGH LOCATION

BE sure to select a plot which is high so that it will have good ventilation and drainage. Build far enough away from your home, so that you will have plenty of room to expand your poultry plant. The poultry house should face south or southeast to get the full benefit of the sun. Trees to the north for a windbreak and sandy loam soil are desirable.

BUILDING THE HOUSE

OPINIONS differ about poultry house construction principally because of the different systems of management and varied climatic conditions under which poultry is kept. Even with large flocks, small houses may vary greatly in construction yet give complete satisfaction. With small houses the requirements are much simpler. It is more difficult to observe the fundamentals of correct housing with larger houses. There should be plenty of room for the birds. Crowded quarters promote laziness, unproductivity and other evils. Provide at least four square feet of floor space for each hen. For instance, if you are planning to house 25 hens, provide at least 100 square feet of floor space, making the house 10 by 10 feet. For larger flocks build the house 18 or 20 feet deep and extend the length according to the number of birds to be housed. Walls and roof should be so lined or built as to be durable and water-proof. Your State Experiment Station, or the United States Department of Agriculture at Washington, D. C., can furnish plans if those suggested here are not exactly suited to your needs.

Frequently old buildings around the farm can be remodeled inexpensively. These will be just as satisfactory as new buildings or more expensive equipment, provided correct housing fundamentals are followed.

FOUNDATIONS AND FLOORS

THE house should be set on concrete foundations extending at least 2½ feet beneath the ground. If water is piped into the houses a drain should be installed. Concrete floors should be waterproofed. Avoid dirt floors if possible. In any case, plenty of good deep litter should be used and changed frequently. If board floors are used, set the boards close together and cover with deep litter to avoid drafts. New floors should be built to allow a slope toward the front of the house, of one inch to ten feet.

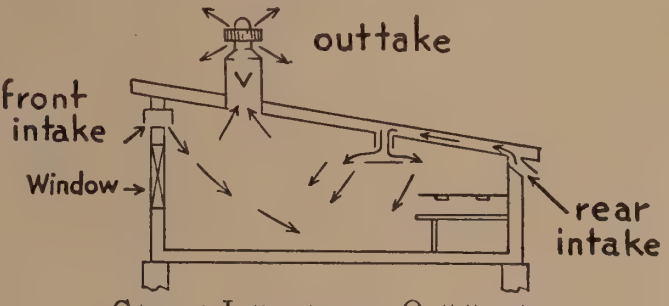
WINDOWS

ALLOW one square foot of window space for each 10 to 15 square feet of floor space. Window frames should slide either up and down, or sideways. The tilt-in or swing-up type are satisfactory although many feeders think they are not as practical as the sliding kind. Use a type of glass which will not filter out the ultra-violet rays of the sun. There are many such glasses on the market but they are necessary on the south or front side only.

VENTILATION

NO matter how good the ventilating system, it will not operate efficiently unless it is planned to fit the particular building you want ventilated. Wrong size intakes and out-takes can make a good system valueless. Get an expert to specify your ventilation needs—it will save you money. These are some points to keep in mind in planning poultry house ventilation:

1. Efficiently remove the moisture laden air.
2. Prevent drafts.
3. Retain heat in cold weather and pass off the excess heat in warm weather.
4. Select a system that is easy to install and economical.
5. Artificial heat adds to operating efficiency.
6. Removal of accumulated carbon dioxide at or just above floor level.



CEILING INTAKES AND OUT-TAKES

A simple ventilating system that gives best results when the house is fully insulated and artificial heat provided.

DOORS

AT each end of the house build a door large enough to admit a cart or wheelbarrow, for cleaning purposes. Doors for the hens should be hinged.

ROOSTS AND DROPPING BOARDS

BUILD all roosts on the same level at the rear of the house, and hinge them. This makes cleaning easier, and by raising during the day, the hens will keep off. Many feeders prefer short cross-wise roosts to those running the full length of the house so that the birds will roost evenly without crowding. Roosts should be placed 2½ to 3 feet above the floor, and several inches above dropping boards. Two inch mesh wire should be nailed under the roosts. Roosts should be 16 inches to 1½ feet apart. Allow 8 to 10 inches of roosting space for each bird.

NESTS

PROVIDE at least one nest for each four or five hens. Arrange the nests at the rear of the house in a darkened corner if possible. Each nest should be 12 to 14 inches square; kept clean and the bottom well covered with shavings or straw. Put a piece of corrugated board on the bottom of each nest beneath the nesting material, to prevent breakage when the nesting material is scratched thin.

TRAPNESTING

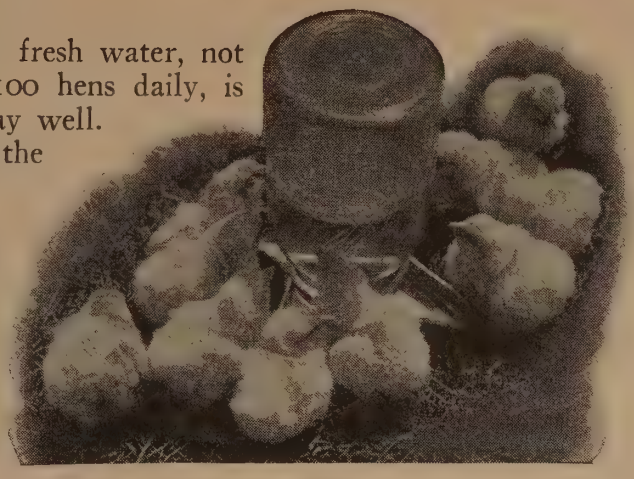
THE trapnest is enclosed on three sides and open in front. When a bird enters she steps on a balance arm which throws up a hinged door in back of her, locking itself as it closes, and the hen cannot leave the nest until released. The trapnest can be used to good advantage to show up low producers, which can be fattened and marketed. With the trapnest exact production records of each hen can be obtained, if she is marked with a numbered metal or celluloid ring, and eggs from good layers can be kept for breeding, thus increasing productivity. Birds picked out at the vent can also be put into trapnests for protection until their vent is healed.

This method is perhaps too costly for the average poultry farm over the entire season, but November, December, and January offer good periods for trapnesting. The average yearly production for each hen can be measured and the poor layers weeded out.

FEED HOPPERS

SO that many of the birds can feed at one time, ample hopper space is needed for heavy egg production, especially when the flock is laying heavily and consuming a large quantity of mash. A trough-type hopper is best since it allows the birds to eat from both sides. Many feeders prefer a dual-purpose hopper. It has two compartments; the lower for Mash, the upper for grit and oyster shells. Across the top of this hopper, lengthwise, is a wooden spindle or roller bar which prevents the birds from roosting and keeps the grit and oyster shells clean. If trough-type hoppers are used, supply small wall hoppers for grit and oyster shell. Hoppers should be raised about 18 inches above floor level. One linear foot of floor space should be provided for each eight birds.

WATER FOUNTAINS



A CONSTANT supply of clean, fresh water, not less than 5 gallons per 100 hens daily, is necessary if the hens are to lay well. Water pans should be set near the mash hoppers. Flat refrigerator pans are good. Many commercial types are available, including heated fountains for winter use, and automatic fountains. It is a saving of labor to have each house piped for running water.

SHIPPING COOPS

THIS table shows the approximate proper height of coops for shipping different types of poultry and the number of birds they will hold. Standard coops measure two feet wide and three feet long.

COOPS FOR	HEIGHT OF COOP	BIRDS PER COOP
Turkeys	20 inches	5 to 6
Geese	16 inches	6 to 9
Old Roosters	16 inches	8 to 10
Large Fowls	16 inches	10 to 12
Ducks	12 inches	8 to 12
Small Fowls	12 inches	14 to 16
Spring Chickens	12 inches	18 to 20

HOUSING

BIRDS of the same age and body conformation should be housed together; all weak, deformed or poorly developed birds should be culled out and sold for meat. It is advisable to dust each bird with Sodium Fluoride as she is put into the house, to destroy body lice. Once pullets are in the laying house they should be kept there; they will eat more and lay better.

Culling Coop Method

Culling

TRAPNESTING in recent years has made it possible to study the laying record of individuals and then associate their records with certain characteristics. The results have shown that by means of these characteristics, producers with varying degrees of ability can be sorted or culled fairly accurately. The equipment, inconvenience, and labor involved with trapnesting makes it impractical for

CULLING—*Continued*

many farmers, who use the culling coop method with fairly satisfactory results.

Culling refers to sorting desirable and undesirable hatching eggs, chicks, pullets, cockerels, hens and breeding males. The greatest emphasis has been placed on sorting the hens. Culling should start with the eggs and be continued regularly. Weak or crippled chicks should be removed immediately after hatching. Pullets of poor vigor, and slow-maturing, off-type individuals, should be recognized and culled before laying starts. In many sections systematic culling of pullets starts in July and continues about monthly until October, to remove such poor layers as can be recognized. Fall culling is desirable for selection of the best individuals to be reserved as breeders.

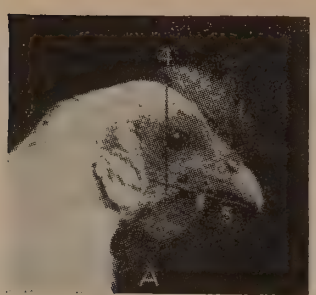
Many people think that culling requires expensive equipment and expert knowledge regarding the general characteristics of their birds. As a result, they do not try to separate the good and poor layers, and hence fail to obtain the most profitable results from their flocks. Culling is important and necessary. Poor producers are profit reducers. For best results, birds averaging less than 120 eggs per year should be eliminated from the laying flock.

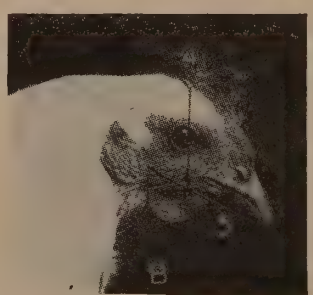
A chick must have breeding to be a good producer later, but no matter how good the breed, poor results will be obtained if they have been improperly fed. Follow the feeding schedule on page 39 for best egg production.

CULLING COOP METHOD

MAKE a frame about 3 feet in width, 6 feet in length and 2 feet in height and cover with wire netting. Make a sliding door at one end and a small door in the top to remove hens. Catch a dozen or more hens at one time and select one which you know is a good layer. Put her in a separate coop and keep her as a guide for your culling tests. Then examine your hens one by one.

These photographs, from the Kansas State College of Agriculture and Applied Science, show some points to look for in culling. At right (A) a strong breeding head; (B) a highly inbred and weak head.





The distance from base of comb to top of wattles (4) should be about the same as distance from front of earlobe to end of beak (5) in well-balanced heads as in (A). In crow-headed birds, the length of head is greater than depth as in (B). These dimensions do not change in adult birds applying whether the hens are laying or not.

HOW TO TELL

A Poor Layer

A Poor Layer

THE vent of a poor producer is small, dry and round. Its pelvic bones are narow (about ¾ inch wide).

The body is fat and round, the back sloping.

The wattles, comb and ear lobes are small and dry, showing poor blood circulation. The poor layer goes to roost early and is one of the last to leave. Her eyes are dull, her appetite lazy and the beak and shanks yellow. These birds should be separated and sold to the market; they are never profitable.

The experienced poultryman is able to identify a cull at a glance, and culls his flocks throughout the year, catching them with a long hooked wire without disturbing the other birds.

A Good Layer

EXAMINE the bird thoroughly. A good producing hen has a large moist vent, oblong in shape, with wide set pelvic bones.

The body is rectangular and the back broad and long.

The wattles, comb and ear lobes should be full and warm, showing good blood circulation. The beak and shanks should be pale.

An alert, vigorous bird, one which goes to roost late and is off the roost early, one who eats a lot and whose droppings do not show undigested food particles, one whose beak is strong and whose eyes are bright, makes the best layer.

A Good Layer

What to look for when Culling your Flock

GENERAL APPEARANCE

Good Producer

The friendly, busy and active hen usually needs no attention. She scratches hard, eats well and molts late.

HEAD
Refined, short, thin

EYES
Sparkling, big, alert

Poor Producer

The lazy, pouting hen which has little appetite, roosts early and molts early, is eating up your profit.

HEAD
Beefy, long, full face

EYES
Heavy eyelids, dull, soggy

[PHOTOGRAPHS, COURTESY OF PRAIRIE FARMER, CHICAGO]

COMBS AND WATTLES
Glossy, full, red, warm

LEGS, BEAK
White; short and strong beak

Shows ability to assimilate enough feed to produce a lot of eggs

Poor layer cannot utilize big quantities of feed due to narrow body

COMBS AND WATTLES
Dull, contracted, cold, scaly

LEGS, BEAK
Yellow; long, thin beak

BODY
(*General*)
Broad, rectangular

BODY
(*General*)
Ungraceful, round

BACK
Long, broad and flat

Large, moist vent, faded in color. Wide-spread pelvic bones

Shrunken, dry, yellowish vent. Coarse, closely set pelvic bones

BACK
Narrow and sloped

ABDOMEN
Soft and full

ABDOMEN
Hard, small

CHEST
Soft and full

CHEST
Hard, thin

PELVIC BONES
Thin, far apart and pliable

PELVIC BONES
Thick, close and stiff

FEATHERS *and* TOE NAILS
Rough, threadbare

FEATHERS *and* TOE NAILS
Clean and loose

Changing to Laying Mash

When birds are first housed the growing mash should be changed to RED ROSE LAYING MASH with or without Cod Liver Oil (as desired), making the change gradually.

Laying Hens

Interior of Modern Purdue type poultry house, built at a cost of $406 for material and $60 for labor. It is 20 by 50 feet and accommodates 300 White Leghorn Hens.

WHEN feeding laying hens, two objects must be borne in mind: maintenance and egg production. By maintenance is meant the feed necessary to build up the bird's body. The body is continually being drained and exhausted by the processes of nature and it is necessary to keep it healthy and strong in order to insure maximum egg production. The bird's body contains more than 55% water, 20% protein or nitrogenous material, nearly 20% fat, and about 4% ash, and the rations must be balanced to continually renew these elements.

For Egg Production

THE best results can be obtained only if the nutrients in the above paragraph are fed in sufficient quantities to replace loss from body maintenance and egg production. This is but logical. The egg is part of the hen's body, and excess nutrients should be supplied from which to form the egg. This is easily seen when the composition of the egg is compared with the composition of the body. The whole egg contains about 65% water, more than 13% protein or nitrogenous material, and about 10% fat, in addition to the shell, which constitutes about 12% of the entire egg.

RED ROSE *Laying Mash*

(Guaranteed Analysis: Min. Protein, 20%; Min. Fat, 5%; Max. Fibre, 7%; Carbohydrates 50%.)

Made from: Meat Scrap, Fish Meal, Buttermilk, Dried Whey, Wheat Bran, Wheat Middlings, Ground Oats, Alfalfa Meal, Hominy Feed, Corn Gluten Feed, Corn Meal, O. P. Oil Meal, Soybean Oil Meal, Calcium Carbonate, Salt, and Fortified Cod Liver Oil when desired.

A SCIENTIFIC achievement. Made from the correct proportion of animal and vegetable protein, plus a variety of materials needed to keep the hen in superb health and replace the nutrients egg-making absorbs. Will produce results for the feeder at a cost that will show him a substantial profit on his investment.

Figure it for yourself: One ton of Red Rose will ordinarily feed 50 hens for one year. A dozen extra eggs per hen, times the price at which eggs are selling, equals the EXTRA value to you of the feed that produced the eggs. With eggs averaging only 20 cents per dozen the year round, if Red Rose increased your egg yield per layer only 12 eggs per year over the ration you are now feeding, you could afford to pay $10 per ton more for it. It is good economy to use Red Rose Laying Mash.

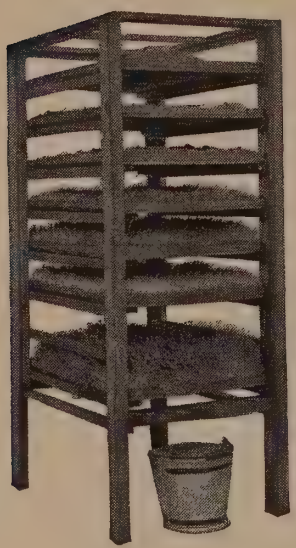
RED ROSE *Scratch Grains*

RED ROSE SCRATCH GRAIN is an excellent grain supplement for the Mash, and should make up about one-half the total ration. Made from Cracked Corn, Wheat, Barley, Buckwheat, Kaffir Corn. (Guaranteed Analysis: Protein, 10%; Fat, 2½%; Fiber, 4%; Carbohydrates, 65%.) It is a high-grade feed with a wide reputation for quality and uniformity. Scatter in litter and make the birds work for it.

FEEDING GRAIN

A MODERATE amount of RED ROSE SCRATCH GRAINS should be fed in the morning, and a full feeding about an hour before the pullets go to roost. This system will induce heavy consumption of Mash during the day to encourage egg production, while the liberal grain feeding at night will keep up the body weight so that production can be maintained.

—and Other Feeds



Oat Sprouter

OYSTER shell, grit, and plenty of fresh, clean water must be available at all times. Green feed such as cabbage, sprouted oats, or mangel beets should be supplied daily in quantities not to exceed five pounds per hundred birds. Sour skim milk is valuable, since it aids digestion and helps kill injurious bacteria.

Each Eshelman Poultry Feed is especially designed to meet the particular requirements for which it is used. Plenty of exercise (unless the birds are raised in confinement) and the use of ESHELMAN RED ROSE POULTRY FEEDS as recommended, will insure profitable and satisfactory results.

Avoid Startling Pullets

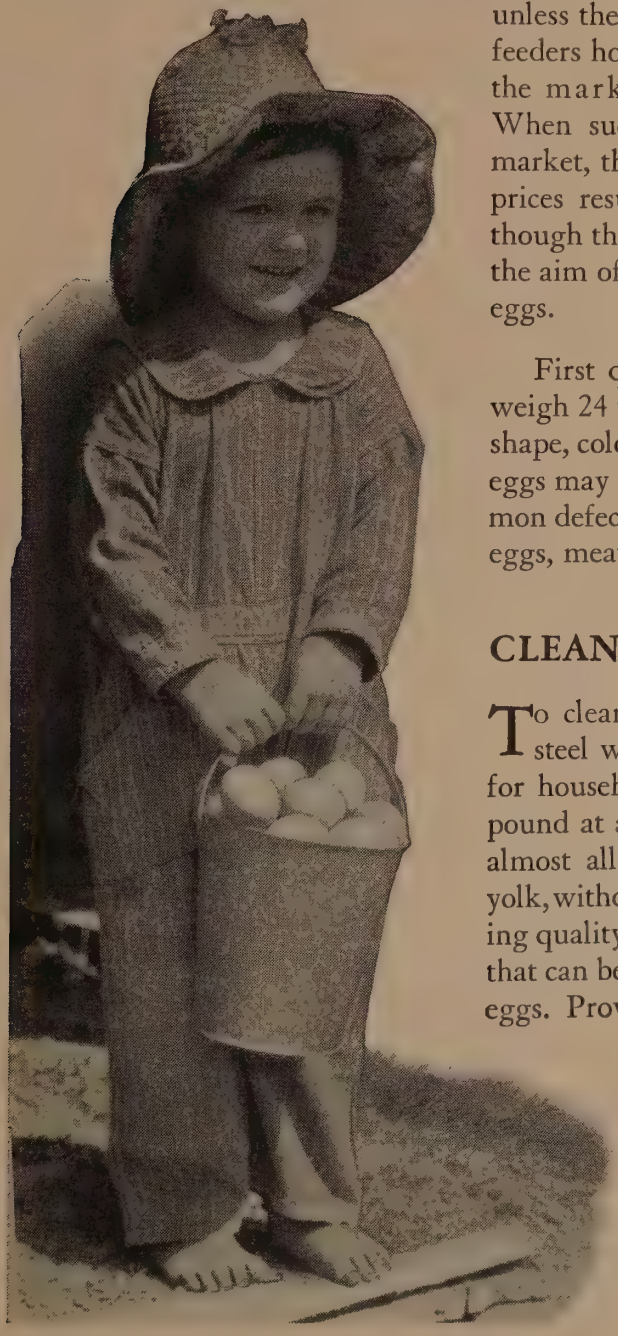
NEWLY housed pullets are very easily startled, and sudden fright cuts down egg production. Always whistle or rattle the latch before entering a pen of birds, and move quietly while in the pen.

Laying hens need plenty of pure, fresh water, supplemented with succulent feed such as cabbage, sprouted oats, or mangel beets. They should also have large amounts of hard grain and seeds, which are properly balanced in ESHELMAN RED ROSE SCRATCH GRAINS, which should make up about one-half the total bulk feed, the balance being RED ROSE LAYING MASH with or without Cod Liver Oil, as desired. This should always be accessible in large hoppers. Sour skim milk is valuable, since it aids digestion and kills injurious bacteria. Tests by various experiment stations prove that of all available proteins, animal proteins are most valuable for egg production.

A QUALITY EGG PROGRAM

THE feeder who is in business to stay will make every effort to improve the quality of his eggs, and his grading and marketing methods. Improved egg marketing methods concern not only the poultryman but the dealer and consumer as well. The demand for extra fresh quality eggs, over the storage variety, is constantly growing. Reliable egg dealers will usually admit that they would rather handle only first quality eggs.

Many feeders who complain about prices have only themselves to blame. Remember, that from the time the egg is laid until it is opened for consumption, it is constantly deteriorating—a great deal of which occurs right on the poultry farm unless the eggs are marketed promptly. Some feeders hold their eggs for higher prices when the market seems to warrant an advance. When such eggs are finally shipped to the market, they are of inferior quality and lower prices result. The feeder actually loses even though the market has advanced. It should be the aim of every feeder to market only quality eggs.



First quality eggs on most markets must weigh 24 to 27 ounces to the dozen. The size, shape, color and age may be uniform—still the eggs may be inferior in interior quality. Common defects in this respect are heavily shrunken eggs, meat and blood spots, checks, etc.

CLEAN EGGS

To clean soiled eggs, use a medium grade steel wool (somewhat coarser than is sold for household use). It can be bought by the pound at a hardware store. This will remove almost all the dirt and stains including egg yolk, without affecting the appearance or keeping quality of the egg. There are several things that can be done to reduce the number of dirty eggs. Provide plenty of nests and use a generous amount of nesting material, preferably planer shavings. Gather eggs at least twice a day; remove broody hens as soon as discovered.

A QUALITY EGG PROGRAM

1—*Produce Quality Eggs with Sound Shells*

a. Segregate all male birds except during breeding season.
b. Feed standard rations with at least 50% hard grain.*
c. Limit green food to 5 pounds per 100 birds a day.
d. Use feed containing cod liver oil for confined birds.
e. Provide grit and shell at all times.

2—*Produce Clean Eggs*

a. Provide one nest for every five hens.
b. Keep nests clean (first choice, Shavings; second, Straw).
c. Keep litter clean (first choice, Peat Moss).
d. Provide wire over drop-boards (1½-inch mesh, 16-gauge).

3—*Collect and Handle Eggs to Preserve Quality*

a. Collect eggs with clean, dry hands.
b. Collect at least twice daily: 11 and 5 o'clock.
c. Collect in clean, rigid baskets.
d. Place in clean egg room, free from odors.
e. Use home-made egg tester (see page 18).

4—*Keep Eggs Cool*

a. Don't allow broody hens to remain in nests.
b. Keep laying houses ventilated.
c. Keep egg-room temperature 55 degrees or lower.
d. Don't transfer eggs to cases until thoroughly cooled.

5—*Pack Eggs Daily*

a. Clean all dirty eggs; identify infertile eggs.
b. Grade all eggs for size; candle all sold at retail.
c. Pack eggs large end up; use clean, dry cup-flats and fillers.
d. Don't pack newspaper or excelsior at top and bottom of case.
e. Use two cup-flats reversed, at top and bottom of case.
f. Use 3-penny cement-coated egg-case nails; never nail cover to center partition.

6—*Protect Eggs in Shipment*

a. Ship at least twice each week. b. Protect eggs from wind and heat of sun in shipment. c. Never stand case of eggs on end. d. Avoid unnecessary delays and rough handling in transit. Load carefully—drive carefully.

*A complete ration contains 50% mash and 50% grain. Reduce or increase the grain proportion to reduce or increase the birds' weight.

COMPLETE FEEDING SCHEDULE

FIRST TWENTY-FOUR HOURS—No feed, water or litter.

TWENTY-FOUR HOURS OLD

Give a light feeding of RED ROSE STARTER. From then on feed at three-hour intervals for the first four or five days.

A small quantity of chick size grit (about one-half teacupful per hundred chicks) may be mixed with the Starter at this time.

Fresh, clean water with the chill removed. A little sour milk or buttermilk.

Brooder temperature 100° F. Allow chicks a little freedom around brooder house. No grain.

FOURTH TO SEVENTH DAY

Five feedings daily of RED ROSE STARTER at regular intervals; or feed continuously from hoppers. Fine grit and charcoal in separate hoppers.

Fresh water continuously (never let fountains run dry after this time).

Sweet or sour milk if desired, always using *glass or earthenware vessel.* Never alternate sweet or sour milk. Keep vessels clean and sweet.

Brooder temperature 98° F. up to seventh day. Provide one-half square foot of floor space for each chick until six weeks old. Cover floor with good litter.

SEVENTH DAY TO SEVENTH WEEK

Feed RED ROSE STARTER continuously, taking care not to let it become wet or sour. Start RED ROSE CHICK GRAINS, one feeding late in afternoon. Increase amount daily as needed. Grit, Charcoal and Fresh Water at all times.

Green Feeds, such as the top of sprouted oats, if desired. Feed in the middle of the day, as much as they can clean up in 15 or 20 minutes. Brooder temperature 95° F. from seventh day gradually reducing to 90° F. by the fourteenth day. 85° F. from fourteenth to twenty-first day. 80° F. from twenty-first to twenty-eighth day. Reduce to 70° by the seventh week.

Keep litter dry. Change weekly after third week.

SEVENTH WEEK TO MATURITY

Gradually change from RED ROSE STARTER to RED ROSE GROWING MASH.* Growing Mash should constitute more than half the ration. Feed dry. Keep before the birds continuously, in self-feeders.

Gradually change from RED ROSE CHICK GRAINS to RED ROSE INTERMEDIATE CHICK GRAINS.

Feed twice a day—sparingly in the morning and all they will eat at night.

Grit and Charcoal.

Continue to feed Sprouted Oats or Green Feed unless on good range.

A plentiful supply of fresh, clean water is necessary for health and growth. Two-gallon earthenware milk crocks are satisfactory and can easily be cleaned. Put drinking vessels near Mash hoppers.

Don't over-crowd. Supply low, broad perches in brooder house. Provide plenty of ventilation, but avoid drafts. Give plenty of shade and range. Avoid stuffy brooder houses.

Keep brooder houses frequently disinfected with 5% creol solution.

Use litter on brooder house floor. Change weekly.

** If Red Rose Starter & Grower is used, it will be unnecessary to switch to Red Rose Growing Mash at this time.* *(See pages 13-14-15.)*

LAYING HENS *and* BREEDERS

Fall and Winter FEEDING

GRADUALLY change from RED ROSE GROWING MASH or RED ROSE STARTER & GROWER to RED ROSE LAYING MASH, with or without Cod Liver Oil as desired. Feed in self-feeders, dry, to avoid souring. Many feeders prefer RED ROSE LAYING MASH with Cod Liver Oil at this time, in order to avoid any possibility of break-down, through lack of Vitamin D (it must be remembered that after birds are housed they are thus deprived of much of this vitamin which comes through direct sunshine).

Gradually change from RED ROSE INTERMEDIATE CHICK GRAINS to RED ROSE SCRATCH GRAINS. Feed only at night—all they will eat. Grit and Charcoal. Green Feed such as cabbage or sprouted or germinated Oats in quantities not to exceed five pounds per hundred birds. Clean Oyster Shells in self-feeders. Plenty of fresh, clean water at all times, putting fountains in shade. An egg is two-thirds water—a hen cannot lay unless she has plenty of it. Don't over-crowd. Keep houses clean, disinfect frequently. Always have plenty of ventilation without drafts. Always have deep litter on floor. Keep layers confined during cold and stormy months. Do not force breeders for winter, as you would laying hens. Exercise is essential.

Quantity of Scratch Grains per day, per 100 birds (*egg breeds*)

	WITHOUT LIGHTS	WITH LIGHTS
January, February, March	12 pounds	14 pounds
April, May and June	10 pounds	12 pounds
July, August, September	7 pounds	
October, November, December....	12 pounds	14 pounds

For "How Much to Feed," see also page 45.

USE OF LIGHT

ARTIFICIAL lighting of layers during winter months is an accepted practice, the object being to equalize the hours of light and darkness to correspond with summer conditions. It is not a forcing process. Morning lights automatically turned on at 4 A. M. are believed to give best results.

When the hens come off roost, they must find grain, mash, and water, since without extra feed, artificial lighting is valueless. Pullets respond best to lights. It is not generally advisable to use lights on breeders. Leghorns and other light breeds show more marked effects from lighting than do birds of the heavier breeds. While artificial lights have not always been successful in increasing annual egg production, the advantage lies in the increased number of eggs produced during November, December, and January, when prices are usually highest.

WET MASH

THE feeding of wet mash at noon, mixed with germinated Oats or semi-solid Buttermilk, for the purpose of increasing Mash consumption for egg production, is a practice of some localities, and this is left to the discretion of the feeder.

Spring and Summer FEEDING

A CLOSE check should be kept on the body weight of heavy producers during the Spring and Summer months. During the Spring a wet mash at noon composed of RED ROSE FATTENING MASH is desirable if body weight does not hold up and the birds show signs of moulting. Feed grain liberally at night and also in morning if birds are laying heavily. Confine during the morning.

FEEDING *for Flesh*

FEED RED ROSE FATTENING MASH mixed with water or milk to a consistency of heavy cream. A little RED ROSE SCRATCH GRAIN helps. Water is not necessary; they get it in the Mash mixture. Confine in crates or coops. Give sharp grit and charcoal.

A Three-Point Program for BROILER MANAGEMENT

THE growth and importance of the broiler industry during recent years needs little comment. Broiler Raising, once simply an outlet for surplus birds, has developed into an industry of huge proportion. Not only do culls and surplus cockerels contribute their full share to the profits, but entire flocks are bred for this purpose. Plants of enormous capacity are maintained where special strains are constantly developed to meet the requirements of this discriminating but profitable market.

Feeding methods, too, have evolved from a haphazard, forced feeding and fattening process, to a problem that requires skill, judgment, careful management, and the use of a feed which will economically meet all requirements.

There is always a market for well-fleshed broilers, and economically produced, they nearly always bring a profit. The great demand for broilers has made them more plentiful, and naturally, the market more discriminating. Selection of breed must rest with the feeder's choice, and his local market demands. Obviously, some breeds are more adaptable for this purpose—some of the Rocks and Reds for example, than others. Regardless of the breed chosen, however, certain standards must be adhered to. Heavy, white, straight-boned, well-feathered birds of good pigmentation and flesh quality will command top prices. More feeders every year recognize the advisability of killing off runts and weaklings, and spending their money on better birds; fewer but better broilers will, in the end, prove more profitable.

The following table will give some idea of the weight requirements for broilers to grade "fancy" on the New York and Washington markets.

	HEAVY BREEDS ROCKS, REDS, ETC.	LEGHORNS
March	1½–2 lbs.	1 –1½ lbs.
April	1¾–2¼ lbs.	1¼–1½ lbs.
May	2½–3 lbs.	1¾–2 lbs.
June	2½–3 lbs.	2¼ lbs.
July	3 –4 and up	2¼ lbs.

Broilers that can be marketed during May and June at three pounds will find a ready market at good prices.

GOOD STOCK—Purchase good chicks from a high-grade blood-tested flock; chicks which are vigorous and which have been bred for sturdiness and rapid development, especially if the chicks are to be raised in batteries or confinement. Losses through disease, death, and culls, which cut severe inroads into profits, can be controlled through the purchase of really good chicks from a reliable hatchery. The few extra pennies spent for good stock will be low compared with the dollars invested and lost because of chicks which have never had a real chance. Remember that no kind or amount of feed will compensate for lack of vitality in cheap chicks.

GOOD MANAGEMENT—Houses must be roomy and sanitary. Rapidly growing birds require at least one square foot of floor space for every two or three chicks. Houses must be draft-proof and sunshine must be provided. If birds are raised entirely in confinement or batteries where direct sunshine is not available, a feed high in Vitamin D content must be provided.

Provision must be made for expansion as the chicks grow. Plenty of roosting space must be available. Crowding prevents growth, encourages cannibalism and a host of other misfortunes, and since rapid development depends upon both the quantity and quality of feed consumed, plenty of mash hopper space and fresh water must be available.

Sanitation is important. Before the birds are housed, all interiors, feed hoppers, etc., must be disinfected. When the broilers are raised on a very large scale, break up flocks into units of 300 or 400 birds to afford better control. Provide good litter, about 4 inches deep, or wire flooring.

3. GOOD FEED—Broiler feeding differs from the regular flock feeding, in that forcing is desirable. A specially prepared feed is needed if the venture is to be profitable. This is true because pullets that are to become part of the laying flock must be developed for egg-capacity. With broilers, good fleshing is the all-important problem. The more quickly they are fleshed into market condition the greater will be the profit.

Eshelman RED ROSE *Broiler Ration*

THIS feed has been built to meet the demand for a feed that will produce fancy, white, tasty, well-fleshed birds in the shortest possible time. A mass of nutritional data and many laboratory checks and tests have contributed their share to the efficiency of the feed. The rapidity with which feed can be turned into meat has been given careful study, and only materials which are conducive to this purpose are used. Proteins, Vitamins, bulk, palatability, and real dollar-value are built into every pound of RED ROSE BROILER RATION. Vitamin D is protected with the finest grade of Fortified Cod Liver Oil.

(Guaranteed Analysis: Protein 17%; Fat, 4½%; Fibre, 7%; Carbohydrates, 55%.)

Ingredients: Pure Corn Meal, Wheat Bran, Wheat Middlings, Oat Meal, Pulverized Oats, Meat Scrap, Wheat Reddog, Soybean Oil Meal, Alfalfa Meal, O. P. Oil Meal, Dried Buttermilk, Dried Whey, Fish Meal, Calcium Carbonate, Salt, and Fortified Cod Liver Oil.

Low feed consumption per pound of gain, plumpness of body, and similar requirements, are matters of feeding. There can be only one reason why so many feeders throughout the important broiler sections of the east choose RED ROSE BROILER RATION year-after-year: it brings their broilers to market weight, efficiently, rapidly, at low cost.

Special FEEDING SCHEDULE *for Broilers*

TWO methods are available. The first, automatic hopper feeding, will produce excellent results with a minimum of labor. It is described in detail on page 39. The Periodic Stop-and-Go method may afford better control, but requires greater attention to detail. It is as follows:

PERIODIC *Stop-and-Go* FEEDING

First Twenty-four Hours—No feed, water, or litter.

Twenty-fourth Hour to Tenth Day

START feeding RED ROSE ALL-MASH STARTER, at three-hour intervals, all the birds will eat in twenty minutes. After the third day gradually lengthen feeding period so that by the tenth day birds will have the feed before them one hour.

Tenth Day to Six Weeks of Age

CHANGE to three feedings daily, following a definite schedule. Provide the first feeding in the morning, as soon as the birds are off roost. Watch appetite of the flock and feed just enough so that the birds will entirely clean up the morning feed about 1 to 1½ hours before their noon feeding. Follow the same directions for the noon and night feedings.

Start feeding Red Rose Chick Grains at night, sparingly at first, increasing the amount as the birds require it.

Grit, Charcoal, and Fresh Water, in separate hoppers. Green Feeds or Sprouted Oats as desired, unless birds are on good range.

Six Weeks of Age to Ten Days Before Marketing

CHANGE from Red Rose All-Mash Starter to Red Rose Broiler Ration, and from Red Rose Chick Grains to Red Rose Intermediate Chick Grains, providing the birds are healthy and free of intestinal parasites. (Never make changes if the birds are "off" feed.) Make all changes gradual, extending the change over a period of about one week.

Be sure to provide additional feeding space to make up for the additional growth of the birds that has taken place up to this time. If the birds are free from Coccidiosis and Intestinal Parasites one week after the change to Red Rose Broiler Ration, periodic feeding can be abandoned and feed should be kept before the birds continuously. They should now be receiving equal parts of Broiler Ration and Intermediate Chick Grains. Of the total quantity of grains fed, two-thirds should be fed at night and one-third in the morning.

Grit, Charcoal, Fresh Water. Greens as desired.

Ten Days Before Marketing

CONTINUE feeding Red Rose Broiler Ration and Intermediate Chick Grains as above, and in addition, start feeding Red Rose Fattening Mash, mixed with water or milk to a crumbly mixture. Feed twice daily, morning and night, all the birds will clean up in twenty minutes.

ROASTING CHICKENS

INCLUDES Cockerels which are nearing maturity, Capons and sometimes Pullets. The object of conditioning is to have them large in size, yet with tender meat.

FOWLS

FOWLS is a trade name applied to old hens which have passed their usefulness for egg production. When feeding for flesh, birds should be somewhat closely confined, either in small coops or small yards. This prevents roaming and too much exercise, allowing the reserve feed supply to go into fatty tissue. Carbohydrates, fat and nitrogenous material are the essential elements to produce good, plump birds.

RED ROSE *Fattening Mash*

FATTENING MASH is especially economical for increasing the weight and flesh quality of Roasters and Broilers for the market. With RED ROSE FATTENING MASH no grain feed is required; it is a complete ration, palatable and digestible, and is made from the cleanest and purest fattening materials known to the trade. Contains 14% Protein, derived mainly from Meat Scrap, Bone Meal, Dried Buttermilk.

RED ROSE FATTENING MASH insures economical gains, and produces fancy, white, marketable Roasters and Broilers of prime flesh quality; *in the shortest possible time.*

(Analysis: Min. Protein, 14%; Min. Fat, 4½%; Max. Fiber, 5%; Carbohydrates, 60%.)

INGREDIENTS

Corn Meal, Dried Whey, Hominy Feed, Pulverized Oats, Wheat Reddog, Corn Germ Meal, Dried Buttermilk, Rolled Oats, Soybean Oil Meal, O. P. Oil Meal, Meat Scrap, Bone Meal, Calcium Carbonate, Salt.

Mix mash with water or milk to consistency of heavy cream. No water is necessary for drinking.

Plenty of sharp grit makes digestion easy and keeps birds healthy. If birds are to be made to grow fast, they must keep up a good appetite. Too much feed often results in getting them off their feed, which retards their gain. Insure a good appetite by allowing them to become hungry for a short time before each feeding.

FEEDING *for Breeding*

Feed breeders the same feed supplied laying stock (Red Rose Laying Mash and Red Rose Scratch Grains). However, it is not desirable to force production since the eggs will suffer in fertility and hatchability if this is done. Fifty per cent. production is high enough. We suggest that you cut down the amount of Laying Mash and increase the amount of Scratch Feed, because it is especially important to keep breeders in good flesh. Another plan is to substitute Red Rose Growing Mash with Cod Liver Oil for the Laying Mash during this period. Milk, and Green Feed, should be fed in addition to the Mash and Grain. If possible, allow breeders to range.

These Feeds make Good Breeders

Eshelman
RED ROSE SCRATCH GRAINS

Eshelman
RED ROSE LAYING MASH

QUANTITY OF FEED *Consumed by Poultry*

It is not possible to list this information accurately. Difference in breed, age, size and weight of birds, climatic conditions, range and greens available, and other conditions, definitely influence the amount of feed birds will eat under normal circumstances. This table will serve as a general guide for the feeder:

Chicks, per bird 1 to 6 weeks:	2 lbs. Chick Starter 1 lb. Chick Grains	*This table based on White Leghorn Breed*
Growing Birds age 6 to 20 weeks:	8 lbs. Growing Mash 2 lbs. Intermediate Chick Grains 6 lbs. Scratch Grains	
Mature Birds during 1 year laying period:	3 lbs. Mash per month 3 lbs. Scratch per bird	

FERTILITY OF EGGS

To select hatchable eggs, choose only clean ones of normal size produced by hens of normal proportions and good laying ability. At the time of selection, the hens should be absolutely healthy and mated in the following manner:

BREED	HENS TO ONE MALE
Rhode Island Reds	8-12
Plymouth Rocks	8-12
Wyandottes	8-12
Orpingtons	8-12
Brahmas	8-12
Leghorns	12-18
Anconas	12-18

All breeders should be at least 18 months old, the best results coming from second year stock. Never hatch from pullets that have been under lights during the winter.

Be careful that the vitality in the parent stock is high. Eggs laid in the spring or the natural breeding season have the higher fertility. Care should be taken that the health of breeders should be of the best. Proper feeding and plenty of exercise make good breeders.

SEASONAL HINTS *for the Poultryman*

These Monthly Reminders are Suggested by a Practical Poultry Raiser
You Will Find Them Helpful on Your Farm

SPRING

MARCH—*Baby Chicks:* Start light breeds for early fall layers. *Layers:* For heavy production, feed ESHELMAN RED ROSE FATTENING MASH and buttermilk in addition to ESHELMAN RED ROSE LAYING MASH and SCRATCH GRAINS. Toward end of month gradually discontinue lights.

APRIL—*Chicks:* Keep in brooders first few weeks; give clean range; plenty of hopper space. Feed ESHELMAN RED ROSE CHICK STARTER and CHICK GRAINS. *Layers:* Same feeding as March. To maintain egg production, range birds in afternoon only. Gather eggs frequently. *Breeders:* Provide outside range.

MAY—*Young Birds:* Separate pullets from cockerels. Teach birds to roost; avoid crowding and smothering. Young males to be sold for broilers—fatten on ESHELMAN RED ROSE FATTENING MASH. *Layers:* Plenty of ESHELMAN RED ROSE LAYING MASH; gradually reduce grain feed.

SUMMER

JUNE—*Young Birds:* New, clean range helps prevent coccidiosis. *Layers:* Provide plenty of fresh, clean drinking water; clean houses; watch for Red Mites. *Broilers:* Prices begin to drop—sell all that are ready.

JULY—*Young Birds:* Free access to ESHELMAN RED ROSE GROWING MASH on range. Plenty of ESHELMAN RED ROSE INTERMEDIATE CHICK GRAINS at night. Sell all poor birds for meat. *Layers:* Plenty of ESHELMAN RED ROSE LAYING MASH to keep production up. Decrease Scratch Grains; add moist ESHELMAN RED ROSE LAYING MASH at noon. Gather eggs three times daily. Look out for Red Mites.

AUGUST—*Pullets:* House those coming into production; put under lights; feed extra moist ESHELMAN RED ROSE LAYING MASH at noon. *Layers:* Cull out non-layers and sell; or separate for forced production. Don't force birds to be kept over as breeders or layers for a second season.

FALL

SEPTEMBER—*Pullets:* Scrape and clean houses; two weeks before housing, give extra quantities ESHELMAN RED ROSE INTERMEDIATE CHICK GRAINS. After housing, change gradually from ESHELMAN RED ROSE GROWING MASH to ESHELMAN RED ROSE LAYING MASH and from ESHELMAN RED ROSE INTERMEDIATE CHICK GRAINS to ESHELMAN RED ROSE SCRATCH GRAINS. Worm each bird; dust with sodium fluoride for lice. Change litter frequently.

OCTOBER—*Pullets:* House all before cold weather. Lights, green feed, condensed buttermilk in the moist ESHELMAN RED ROSE LAYING MASH, cod liver oil and liberal grain feeding keep condition good and production high. *Hens:* Take lights off birds to be kept over as layers or breeders for another season.

NOVEMBER—*Pullets:* Heavy producers need ESHELMAN RED ROSE FATTENING MASH at noon, a full feed of ESHELMAN RED ROSE SCRATCH GRAINS at night. Good sanitation helps prevent roup and other diseases. *Market Birds:* Pen up ten days before sale; feed several times daily ESHELMAN RED ROSE FATTENING MASH mixed with milk or water.

WINTER

DECEMBER—*Pullets:* Feed more grain during cold spells. Warm drinking water; keep litter dry and clean. *Old Birds:* Those forced are about through laying; sell for meat. *Market Birds:* Handle as above (November).

JANUARY—*Houses:* Keep clean; warm; dry. *Pullets:* Keep ESHELMAN RED ROSE LAYING MASH before birds at all times. Slightly warm drinking water. *Breeders:* Select and mate up breeding flocks. *Baby Chicks:* Place orders for later delivery. Buy good chicks.

FEBRUARY—*Brooder Houses:* Clean, disinfect and whitewash a week before chicks arrive. *Chicks* of general purpose breeds should be started. *Pullets:* Same feeding as January. *Breeders:* Gather eggs frequently. Don't hold longer than one week.

TROUBLES—*and how to avoid them*

Every poultryman should have some knowledge of the diseases which are most likely to attack his flock. Prevention of these diseases by proper care of the flock is far better than to attempt to cure sickly birds because (1) the cost of medicine and the time expended are often greater than the value of the cured bird, (2) the disease may spread, (3) a bird once sick is likely to become sick again.

There are three main points which, if carried out carefully, will guard your flock against disease and you against loss.

1—Proper Housing

See that the birds are sheltered in houses which are well ventilated, free from drafts, clean and dry. Keep free from lice and mites.

2—Sufficient Exercising

Encourage exercise by scattering limited amounts of scratch grains in deep litter.

3—Good Food

Too much importance cannot be attached to the necessity for using clean, wholesome food of the proper kind. Eshelman Red Rose Poultry Feeds contain all the necessary elements to guarantee healthy birds.

DISEASES

BUMBLE FOOT

Symptoms: Abscess or tumor-like growth on bottom of foot.

Control: If a valuable bird, lance foot, remove core, apply Iodine, and bandage. Have roosts low, floor free from stones or glass, and covered with deep litter.

CANKER

Symptoms: (1) Solid, cheese-like material adhering to the roof of the mouth, sides of beak, or tongue.

(2) Swollen jaw, small lump on either side of the face.

(3) Throat Canker. Most serious. Wheezing and gasping. Membrane grows in throat, causing suffocation. *Control:* Same as with Roup. (See page 48.)

CANNIBALISM—*Young Chicks*

Symptoms: Toe picking, tail picking, vent picking.

Control: These troubles are apparently not due to a deficiency in the ration so much as to outside causes, such as crowding, lack of feed or water, or too high temperature. Once started, cannibalism becomes a vice hard to control.

Remove injured birds and smear sore spot with tar or prepared ointment distasteful to chicks. Try to locate cause as given above and remedy trouble. Darken brooder house somewhat or paint windows with a blue wash to dim light.

CANNIBALISM—*Laying Birds*

Symptoms: Usually picking out of the vent, causing death, and possibly severe losses in the flock.

Control: Crowded laying houses and lack of nest room may start this trouble. Be sure that there is a nest for every three or four hens, so that no hen will have to lay on the floor where she can be attacked by her mates. Remove at once all birds with prolapsis. In severe outbreaks, it may be necessary to let the birds out of the houses or to pare back the upper mandible to the quick to stop losses.

COMMON COLDS

Symptoms: Bits of straw sticking to beak and nostrils. Some sneezing and mouth breathing. Combs may be pale and birds may appear sluggish. Affected birds hold their head up and gasp for breath, due to clogging of nostrils by dried exudate.

Treatment: Isolate infected birds. Nostrils should be treated with one of the standard poultry disinfectants, diluted as recommended by manufacturer. Apply with a piece of cotton, medicine dropper, or feather.

To prevent spread of the disease dose the flock with Epsom Salts. Feed liberally of green feed. As the disease spreads rapidly through drinking water, use a standard disinfectant as a preventative. Where large numbers of birds are infected, a vapor or inhalation treatment may be advisable, used according to the manufacturer's directions. Be sure the house is properly ventilated and free of drafts.

COCCIDIOSIS

One of the most serious of chick diseases, often causing severe losses between the ages of two weeks and two months, and permanently impairing the health of birds which survive the disease.

Symptoms: In young birds, a droopiness and loss of appetite, followed by sleepiness, drooping wings, head drawn in between shoulders and emaciation. Droppings may be soft and brownish, or be more or less bloody. In old birds with chronic stage of the disease, loss of weight, roughness of plumage, paleness and lameness.

Post Mortem: In young birds with the acute stage the caeca or blind gut leading from the intestines are enlarged and full of cheesy or bloody material.

THE MEDICATED MASH TREATMENT

As a Cure of Coccidiosis

Before commencing the treatment, first thoroughly purge the intestinal tract with Epsom Salts (never give soda to fowls affected with Coccidiosis or Black Head) to clean the digestive system of malassimilated feed and fecal matter. After the chicks have gone to hover or roost for the night, remove all drinking water, and liquid milk if fed, and replace with water containing Epsom salts at the rate of exactly one pound, thoroughly dissolved, to each four gallons, given in place of all other drink. It is of utmost importance that this Epsom salts water be available to the chicks or poults before the first one leaves the brooder or perch in the morning. If the Epsom salts water is placed before the fowls at a later time in the morning, many that actually need the treatment will already have taken a drink of plain water and will therefore not get enough Epsom salts for best results.

Keep the Epsom salts before the fowls for one-half day only, during the forenoon, in place of all other drink. After the Epsom salts treatment, which should end about noon for birds six weeks or older, and at 10 o'clock for younger fowls, all Epsom salts water should be removed and plain water supplied. If the weather is cold or wet, to prevent chilling as a result of the laxative action of the Epsom salts, the young fowls should be confined to their house during the entire day the Epsom salts treatment is given.

COCCIDIOSIS—*Continued*

Immediately after the removal of the Epsom salts water, commence feeding the Medicated Mash, which should be kept before the fowls continuously for a period of between 10 and 15 days, in place of all other mash. Discontinue feeding succulent greens altogether and feed very little scratch grain, only in the evening during the entire period of the treatment. This is most important, for it induces the fowls to consume more of the Medicated Mash, thereby assuring quicker and more complete control of coccidiosis and black head.

The treatment should be commenced immediately upon the first sign of coccidiosis or black head. Desirable results in the general appearance of the fowls should be noticeable within three days after commencement of the treatment. Continue feeding the Medicated Mash at least ten days, always limiting the grain portion of the ration to a minimum, until the droppings are free from blood or liver-colored matter.

For best results in using this, or any other internal treatment as given for the control of coccidiosis and black head, all floor litter should be changed or sprayed with an oil-chemical spray (not water) every 48 hours. This is to keep the litter dry or sterile, preventing development of the disease organism (oocysts) as passed in the droppings.

As a Preventative of Coccodiosis and Black Head

Medicated Mash may be fed one day each week from the time the chicks or poults are two weeks old until all danger of these diseases is past. In feeding Medicated Mash as a preventative of coccidiosis and black head, it is fed in open hoppers or troughs in place of all other mash, and no succulent greens or scratch grain is given, on the day the preventative treatment is administered.

For best results in using Medicated Mash as a preventative, salts should be used in the water as directed above for a period of two hours and about one hour the next morning.

COMBS BLEEDING

Symptoms: Caused by scratches during fall and winter.

Control: Sear with hot iron or cover with Alum. Remove loose ends of poultry wire, protruding nails or pieces of tin.

COMBS FROZEN

Symptoms: Caused by improper ventilation in house, resulting in dampness and drafts.

Control: Rub with snow or cold water and apply vaseline or any good salve.

CROP BOUND

Symptoms: Crop large and bird visibly uncomfortable. Bad breath. Crop full of fibrous material.

Control: Give dose of cotton seed oil and massage the crop until it becomes normally soft.

DIARRHEA

Symptoms in Adult Birds: Looseness of the bowels and soiled vent plumage. May be caused by worms, spoiled or moldy feed, too much green feed, or may be the symptom of some disease such as fowl cholera or typhoid.

Control: Give dose of one pound Epsom Salts dissolved in drinking water per 100 birds. If intestinal parasites are present see section on worms. If feeding is at fault, it must be remedied. The presence of fowl typhoid or cholera will probably be accompanied by heavy mortality. Remove sick birds, clean and disinfect pens, and add sufficient potassium permanganate to drinking water to give it a wine color. Both Fowl Typhoid and Cholera are incurable by drugs, and are highly contagious.

Symptoms and Control in Chicks: Looseness of bowels, sometimes pasting up behind. Caused commonly by chilling, overheating, or improper feeding. Give dose of one teaspoonful of baking soda in each quart of water for one day, cleaning house next day.

Bacillary WHITE DIARRHEA *or* PULLORUM DISEASE

Symptoms: Highly fatal germ disease of baby chicks, causing heavy losses during first few days. Looseness of bowels not always present. Chicks peep shrilly, appear drawn up, and stay under hover.

Control: Considered incurable, and commonly carried through the egg from infected parent birds. Purchase chicks only from breeding flocks which have been blood tested and from which reacting birds have been removed. Can be spread through the flock by infected chicks; hence such chicks should be removed and strict sanitary precautions observed. The feeding of infertile incubator eggs, which may carry the germ of the disease, may spread white diarrhea. If such eggs are fed at all, they should be thoroughly boiled.

Buying chicks from blood tested flocks is the greatest insurance against losses from B.W.D.

FOWL-POX

Symptoms: The first symptoms noticeable are yellowish or reddish blisters on the face, comb, and wattles. These blisters soon harden on the surface and form hard, dark brown scales. With no other complications present the disease is known as Dry Pox. When roup, canker, or colds are present, it is known as Wet Pox.

Immunizing by Vaccination: Birds that have had the disease will usually not contract it again for a year or more. Since the disease itself builds up resistance, or immunity, against re-infection, it naturally follows that this resistance can be built up in the body of a chicken by the administration of a live fowl-pox virus, as described below. This process is called vaccination.

The vaccine should be purchased from a reliable commercial laboratory, preferably in the East, because buying from an Eastern laboratory will assure a live virus of the type of pox prevalent throughout this section. When ordering, state the number of birds to be vaccinated. The manufacturer's directions should be followed *implicitly*.

How to Vaccinate: The web of the wing is the best place to vaccinate. The same wing should be used in every case to simplify later examination for "takes." With care, excellent "takes" should result, and feed consumption will not be materially interfered with.

The vaccine should be injected by means of a CLEAN pen point, with a piece of twine or yarn wrapped around the slightly opened points. Dip the pen into the vaccine and stab the points into the wing-web, near the spot where the wing-band is usually inserted; *one stab will suffice.*

Swelling of this area (the vaccinated follicles) will be noticed from four to six days after vaccinating—a day or two later in rare cases. This will be followed, after another few days, by a scab formation in each follicle. Frequently the scabs from several follicles form into one. These scabs are actual fowl-pox eruptions resulting from vaccination, and they indicate that the vaccine has "taken" and that immunity is complete.

Vaccinate at 8 to 12 weeks: It is always well to vaccinate chickens at eight to twelve weeks of age. Experiments have proven that usually no bad results occur when birds are vaccinated between these ages. Vaccinating older birds may cause serious loss of appetite, slow up development, and a severe case of head-pox may result if the combs are developed.

For best results observe the following precautions:

1. All of the birds in a group should be vaccinated on the same day.
2. Remember that virus spoils in from 12 to 24 hours after it has been mixed. Do not mix more than you can use at one time.
3. Keep all unmixed virus in a cool, dark place until ready for use.
4. Never permit the vaccine to touch any point of the pullet's body except the point of vaccination.

LEG WEAKNESS

Symptoms: Affects chickens between the ages of one to six months. Develop unsteady gait and later are unable to stand.

Control: Decrease the amount of protein feed and get them out of doors in the sunlight. Use Mash with Cod Liver Oil.

LICE *and* MITES

Symptoms: Body Lice stay on the hens at all times, causing irritation.

Control: Dust individual hens with Sodium Fluoride, commonly sold for the purpose. A new treatment is to paint roosts with Black-Leaf 40 in late afternoon; fumes arising during night will kill lice on birds. No amount of spraying and whitewashing hen house will kill body lice. Red Mites hide in cracks and crevices about the roosts and dropping boards during day, and crawl on roosting birds at night to suck their blood, causing serious losses. Paint roosts with Carbolineum or waste crank case oil, and whitewash sidewalls with disinfectant whitewash.

LIMBERNECK

Symptoms: Total or partial paralysis of muscles of neck. Colic, acute indigestion, intestinal parasites and ptomaine poisoning are associated with it.

Control: Clean the yard and house of moldy grain or putrid meat and give the entire flock a dose of Epsom Salts (one teaspoonful to one quart of water or one pound per 100 birds).

PROLAPSE *of the* OVIDUCT

Symptoms: Protrusion of oviduct from vent in a mass of red or purplish tissue.

Control: Grease projecting part with carbolated vaseline and replace with fingers. Inject cold water to cause walls to contract. Give plenty of fresh water.

ROUP

Symptoms: Swelling in the region about the eyes, and a yellow, semi-solid material gathers around the eyeball. Foul odor is often present.

Control: Isolate all infected birds. See that no drafts are present in house. Clean and disinfect thoroughly, and keep litter dry and clean. Use some mild disinfectant in drinking water, such as B.K., Sterilac, or Permanganate of Potash, if desired. Remove accumulations from eye, and bathe with some mild antiseptic wash. Bad cases are usually incurable.

PARALYSIS—*"Fowl" or "Range"*

This condition is a mystery to poultry pathologists. The causative agent has not been discovered; the method of transmission is unknown, and there is no treatment or cure. It is possible that range paralysis is one symptom of a disease called Lymphomatosis, in which other symptoms may be a graying of the iris of the eye, contraction of the pupil and ultimate blindness, enlargement of the liver, kidneys or spleen, or the presence of tumors in the ovary. Other diseases may cause somewhat similar conditions and in case of trouble a competent veterinarian or poultry pathologist should be consulted. Apparently, feeding, management, or the attack of some other ailment such as coccidiosis do not induce range paralysis. Affected birds generally begin to show lameness in one leg as they near maturity or after the pullets begin laying. The birds may be plump and apparently in good condition but they soon lose control and cannot stand. The comb may remain bright and the appetite good, but in time they waste away and die. Recovery rarely if ever occurs. The disease is especially serious from an economic standpoint, appearing when the birds are nearly full grown and after the poultryman has invested time and money raising them. In handling a flock where range paralysis appears, birds which show lameness or gray eyes should be removed and disposed of to avoid transmitting the disease to others. Flocks in which there has been much lameness or blindness, or heavy losses from enlargements of the internal organs, and ovarian tumors, should not be used as breeders until it is known whether or not the disease can be transmitted through the egg to the chick.

TUBERCULOSIS

Symptoms: Birds drop off in egg production and become emaciated and anaemic, accompanied by lameness and swollen joints.

Control: Worst in old birds. Remove infected birds. In bad attacks, kill whole flock and sell only the sound ones. Disinfect all houses and runs.

VENT GLEET

Symptoms: Foul smelling watery discharge and irritation around vent.

Control: Venereal disease spread by males. Kill infected birds and clean poultry house.

WORM GAPE

Symptoms: Chick stands with eyes closed, mouth open, trying to breathe. Seldom detectable in adult fowl.

Control: Better to prevent condition than to cure it. Rear on a new, clean range. Apply lime once a week to spaded yard. Keep chicks off the ground until four or five weeks old. Put three drops of creolin in every pint of drinking water.

INTESTINAL WORMS

Intestinal worms are of two types, roundworms and tapeworms, the latter being less common. Worms cause untold losses, irritating the digestive system and weakening the bird so that it is an easy prey to disease.

Symptoms: Emaciation and general unthrifty condition, possibly lameness. Worms voided with droppings.

Control of Roundworms: Roundworms multiply by eggs which are voided by infested birds and become present in soil, filth in poultry buildings, etc. Avoid rearing chicks on ground where other birds have been the year previous. Add two pounds of tobacco powder to each 100 of mash for growing stock and layers, feeding at intervals for periods of three weeks. Wire dropping boards with poultry netting under roosts to keep hens from picking over droppings. Keep houses clean.

Another well-recommended treatment for worms is as follows:

35% Rectified Oil of Turpentine

65% Extra Heavy White Mineral Oil

Add one-half quart of the above mixture to each 100 pounds of Scratch Grains and mix thoroughly. Let stand over night. Then mix again and feed in troughs as the evening feeding of grain. Feed every fourth evening for twelve days (four treatments), and repeat any time after three weeks.

Clean dropping boards daily while using this treatment and use clean litter after the treatment. Be sure not to use straight Turpentine but specify *Rectified Oil of Turpentine.*

This method of treatment must be handled very carefully.

Control of Tapeworms: Tapeworms have a complicated life cycle, passing one stage in flies of various species, by which they are transmitted to fowls. To remove tapeworms employ special pills sold for the purpose. Where infestation is serious, it is necessary to screen buildings to exclude flies.

T U R K E Y S

THE enormous annual demand for choice, tender, meaty table birds during recent years, especially during the various holiday seasons, has materially increased turkey-raising operations, especially through the eastern states. Properly managed, turkey raising is a profitable venture. Modern methods of sanitation, up-to-date housing and equipment, meticulous attention to detail and quality feeds such as ESHELMAN RED ROSE have turned turkey raising from a gamble to a really profitable business.

RAISE THE BREED *Your Market Requires*

THERE are six standard varieties of turkeys, all satisfactory for commercial purposes: Bronze, Narragansett, Bourbon Red, White Holland, Black and Slate. The Bronze, being the largest, is most popular in some communities, but the smaller varieties have their advantage. They mature quickly and fatten at any age. It is well to raise the breed your market demands.

SELECT BREEDERS EARLY

SELECT breeders at an early age. Some poults start growing immediately and grow steadily until maturity; others are weak when hatched and mature slowly. Watch poults carefully, retain the thrifty growers for breeding, and fatten the others for market. Yearlings and two-year-olds make the best breeders. For mating, a unit of one tom and ten to twelve hens should be used.

HOUSING

It is beyond the scope of this article to go into detail on the subject of housing. There are various methods of housing and rearing young birds, all of which are excellent. A plan should be selected to suit the feeder's immediate needs, the space available, the amount of capital available for investment, his locality, size of the flock, and other factors.

A 10-by-12-foot brooder house will comfortably accommodate from 100 to 125 poults. Oil, gas, coal burning or electric stoves can be used. Young turkeys need a slightly higher (brooder) temperature than chickens. A temperature of 93° to 98° at the edge of the hover is satisfactory for the first week. The temperature should be taken close to the floor and should be reduced gradually as the poults get older.

For partly grown turkeys, an open roosting shed is all that will be required in warm weather. For older turkeys, a shed for shelter, open to the south, with roosts, will suffice, except in localities where the weather is extremely cold. Set roosts 24 inches apart.

HATCHING AND BROODING

Turkeys may be confined daily until they have laid; or nests may be set where the turkeys will be most likely to seek them. Turkeys will usually lay in houses if nests are provided.

Collect eggs daily and keep in a cool place—50° to 60° F. Never set turkey and hen eggs together. Turkey eggs can be hatched either by hens or turkeys, or in an incubator. Artificial incubators and brooders, however, are always most satisfactory. They prevent transmission of parasite germs and lice, save labor, permit handling of larger units and afford better control.

Eggs should not be more than ten days old when set. Twenty-eight days is the hatching period for turkeys. Incubation requirements are about the same as for chicken eggs, with the temperature about one-half degree lower. Much can be gained by writing the manufacturer of your incubator and following his advice.

As the poults hatch, allow them to remain in the machine until thoroughly dry or, if the machine is equipped with a nursery tray, until the hatch is over. Then remove all the shells and unhatched eggs and allow poults to remain in the machine twenty-four to thirty-six hours—until they are placed in the brooder.

CONTROL CROWDING

Control crowding by building around the brooder a fence of inch-mesh wire a foot wide and about two feet from the hover, to confine the poults near the stove for the first two or three days. When birds are six weeks old provide low roosts.

Depending upon the weather, it is practicable to keep the house heated until birds are six to ten weeks old. If allowed to become cold on the roost they will leave immediately and crowd on the floor. When brooding young turkeys during the summer months be sure to provide adequate ventilation to avoid having the brooder house too warm during hot, sunshiny days.

SANITATION, *the Real Key to Success*

PROPER feed is important, because *your birds will be no better than the feed they consume.* But no amount or kind of feed will compensate for the profits lost through the ravages of disease and through other difficulties which can be controlled with effective sanitation. Blackhead and worms have perhaps been the cause of more turkey losses than all other causes put together. The initial cost of the poult, plus labor, plus feed and maintenance costs for several months, *multiplied by the number of poults lost between hatching and maturity,* amounts to a considerable sum. This sum, more often than not, exceeds the profit which the feeder would have made from the sale of the flock.

A 10-Point Program on Sanitation:

1. Always use ample, sanitary feeding troughs.
2. Never permit birds to roam. Properly and sanitarily yarded, they become safe and tame, they cannot stray from home, nor are their eggs ever lost. A five to six foot fence is ample. "High flying" on the part of birds which show this tendency can be prevented by clipping one of their wings.
3. Under average conditions, an acre of good alfalfa or clover pasture, if the pasture is not too dry, will accommodate thirty mature and 200 or more young, half-grown birds. Remember that during the late summer and early fall, grass dries out, loses its freshness and much of its nutritive value.
4. Build up a *practical* sanitation and clean-up program and work it systematically. This will include house interiors and exteriors, runs, roosts, feed and water utensils and *all equipment.*
5. Keep ranges absolutely clean.
6. Move feeding equipment to a clean spot daily; it takes but a moment and pays.
7. Keep sick birds separate from the flock; remove dead birds by burning or burying deeply. Keep birds far away from all types of manure.
8. Keep young poults off the ground entirely for the first several weeks, and when on rearing ground move them to a new location from time to time.
9. Keep young and old turkeys separate, and keep turkeys of all ages separate from chickens. They do not mix.
10. Don't put turkeys on ground that has been used for other turkeys or chickens for a reasonable time.

FEEDING SCHEDULE FOR TURKEYS

(Be sure to locate all feeding equipment so as to prevent any possibility of contamination with droppings or soiled litter. Control grit feeding for the first six weeks, since young turkeys are likely to eat too much of it during this period.)

Continuous FEEDING METHOD

First Day to Four Weeks of Age: RED ROSE TURKEY STARTER in self-feeders, taking care that it does not become wet or sour. Fresh water with the chill removed.

Four to Eight Weeks of Age: RED ROSE TURKEY STARTER in self-feeders as before. Plenty of fresh water. Start scattering hard grit and fine oyster shell on top of the starter in the mash hoppers. It is not always advisable to feed grit and shell in separate hoppers until the birds become a little older.

Eight to Twelve Weeks of Age: Gradually change from RED ROSE TURKEY STARTER to RED ROSE TURKEY GROWER, extending the change over several days. Start feeding limited quantities of RED ROSE INTERMEDIATE CHICK GRAINS at night, scattered on top of the mash. Feed in self-feeders as usual. Plenty of fresh water. Feed hard grit, shell and charcoal in separate hoppers.

From Twelfth Week: Continue feeding RED ROSE TURKEY GROWER in self-feeders. Fresh water as usual. Grit, shell and charcoal in separate hoppers. Change gradually from RED ROSE INTERMEDIATE CHICK GRAINS to RED ROSE SCRATCH GRAINS; feed in separate hoppers. Be sure to keep the mash hoppers well filled.

STOP-AND-GO METHOD

First Ten Days: Many feeders prefer this method for sanitary reasons and to prevent some waste. Feed five feedings daily of RED ROSE TURKEY STARTER. Scatter a limited amount of hard grit and shell on top of the mash.

Tenth Day to Four Weeks of Age: Keep RED ROSE TURKEY STARTER before the birds in sanitary feeding troughs, feeding only enough to last from day to day.

Four Weeks of Age: Same as in the "Continuous Feeding Method."

Eshelman RED ROSE *Turkey Feeds*

RED ROSE TURKEY FEEDS are built from strictly pure, quality feeding materials, the best of their kind that can be purchased, thoroughly recleaned for the removal of all foreign material. They have been developed as a result of exhaustive research into the nutritional requirements for turkeys, both for starting and for growing purposes. In building and marketing a 24% Protein Turkey Starter, we follow the recommendation of one of the country's outstanding authorities on the subject—Pennsylvania State College, State College, Pa. This organization has a wide reputation among turkey growers for the authoritative information and knowledge they have contributed.

RED ROSE *Turkey Starter*

(Guaranteed Analysis: Protein, 24%; Fat, 4½%; Fibre, 6%; Carbohydrates, 55%.)

Made from: Kiln-Dried Corn Meal, Wheat Middlings, Pure Oat Meal, Wheat Bran, Ground Oats, Alfalfa Leaf Meal, Soybean Oil Meal, Meat Scrap, Fish Meal, Dried Buttermilk, Dried Whey, O. P. Linseed Meal, Bone Meal, Calcium Carbonate, Salt and Fortified Cod Liver Oil.

GUARANTEED to provide the natural requirements for sturdy body development and growth, with plenty of resistance against disease—correctly built and balanced. RED ROSE TURKEY STARTER will insure husky, hardy growth and strong, well-formed bones and frames—with low mortality—at low cost.

RED ROSE *Turkey Grower*

(Guaranteed Analysis: Protein, 18%; Fat, 4¼%; Fibre, 7%; Carbohydrates, 60%.)

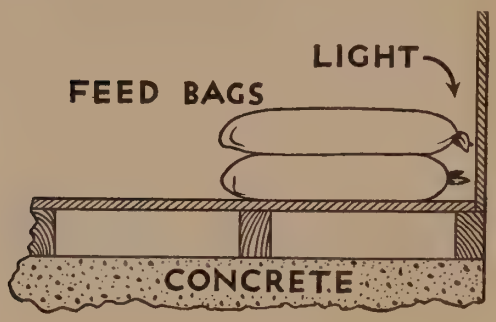
Made from: Corn Meal, Wheat Middlings, Ground Oats, Wheat Bran, Soybean Oil Meal, Alfalfa Meal, Meat Scrap, Fish Meal, Dried Buttermilk, Dried Whey, Charcoal, Calcium Carbonate, Salt and Fortified Cod Liver Oil.

FEED from the eighth week to marketing time. Strictly pure and palatable, RED ROSE TURKEY GROWER contains a wide variety of feeding materials. Proteins, vitamins, health and growth are built right into the feed—every needed feeding element, in fact, to build tender, meaty table birds of distinctive flavor and quality.

THE CARE OF YOUR FEED

We want every bag of Eshelman Feed to be a messenger of Good Will. It is sent to you through our distributors, with the knowledge that your valued patronage depends entirely upon the profitable results produced through its use. The trade-mark "Eshelman Red Rose Guaranteed Feed" appearing on our products is your guarantee of safety and satisfaction.

Every effort is made to supply you with clean, fresh, well-packed feeds. Take care of the feed you buy; avoid needless spoilage and waste.



Cross-section of floor of feed house showing how to safely store your feed on a board floor over concrete.

FOR BEST RESULTS *observe the following precautions:*

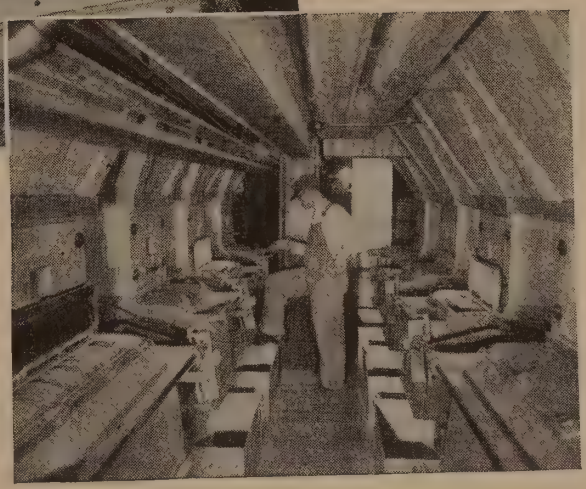
1. Be *sure* the Feed is in good condition when you receive it.
2. Have it delivered to you in new, clean bags.
3. Keep your Feed out of the weather. Store only in a clean, dry place, away from exposure.
4. Don't store Feed against damp walls or on cement floors. If there is a cement floor in your house, lay clean, dry boards before piling.
5. Move old stock to the front of the pile and use it first. Don't allow Feed to become stale.
6. Have your dealer deliver only as much Feed as you can use in a reasonable time.
7. Rats and mice are expensive pests—exterminate them. If rat poison is used, keep at a safe distance from your Feed.
8. Don't blame flock losses on the feed. Samples of feed are sometimes forwarded to us for analysis, accompanied by the statement that the feed in question has caused digestive disturbances or mortality. Quite frequently parts of these samples, before analysis, are fed to chicks—*with perfectly satisfactory results.* This proves that the vast majority of flock losses are the direct result, not of the feed, but of lack of sanitation, careless management, and similar conditions.

THE *Eshelman* PLANTS

FEW feeders realize the safeguards employed by a modern feed manufacturer to insure the production of clean, safe, economical feeds. The following photographs will illustrate many of the labor-saving devices used.

Unloading Bulk Grain, Underground Belt System

Cleaning Bulk Grain Before Elevating



Percentage Feeders Drawing Raw Materials from Supply Bins

THREE plants—one at Lancaster, Pa.; one at York, Pa.; and a third at Circleville, Ohio—manufacture ESHELMAN RED ROSE GUARANTEED FEED. They are equipped with belt carriers for unloading and distributing; batteries of cleaners to screen incoming material; automatic percentage feeders for the accurate proportioning of rations; high-speed mixers; reels and electro-magnets to remove foreign matter; automatic scales; electric sewing machines, and loading devices.

THE *Eshelman* PLANTS

IN our laboratories ingredients are subjected to microscopic and chemical tests to determine values for various formulas. In our bag factory burlap imported from India is cut, printed, sewed and designed, making the complete sack.

Where Feeds are Chemically Tested and Formulas are Scientifically Prepared. A Corner of the Laboratory, Plant No. 1.

Conveying Finished Product to Cars.

When purchasing feed packed under the Eshelman brand, you are assured that it has been manufactured from high-grade ingredients; that it has been prepared and marketed economically by an organization with nearly a century of milling experience, and that it has received the endorsement of thousands of feeders.

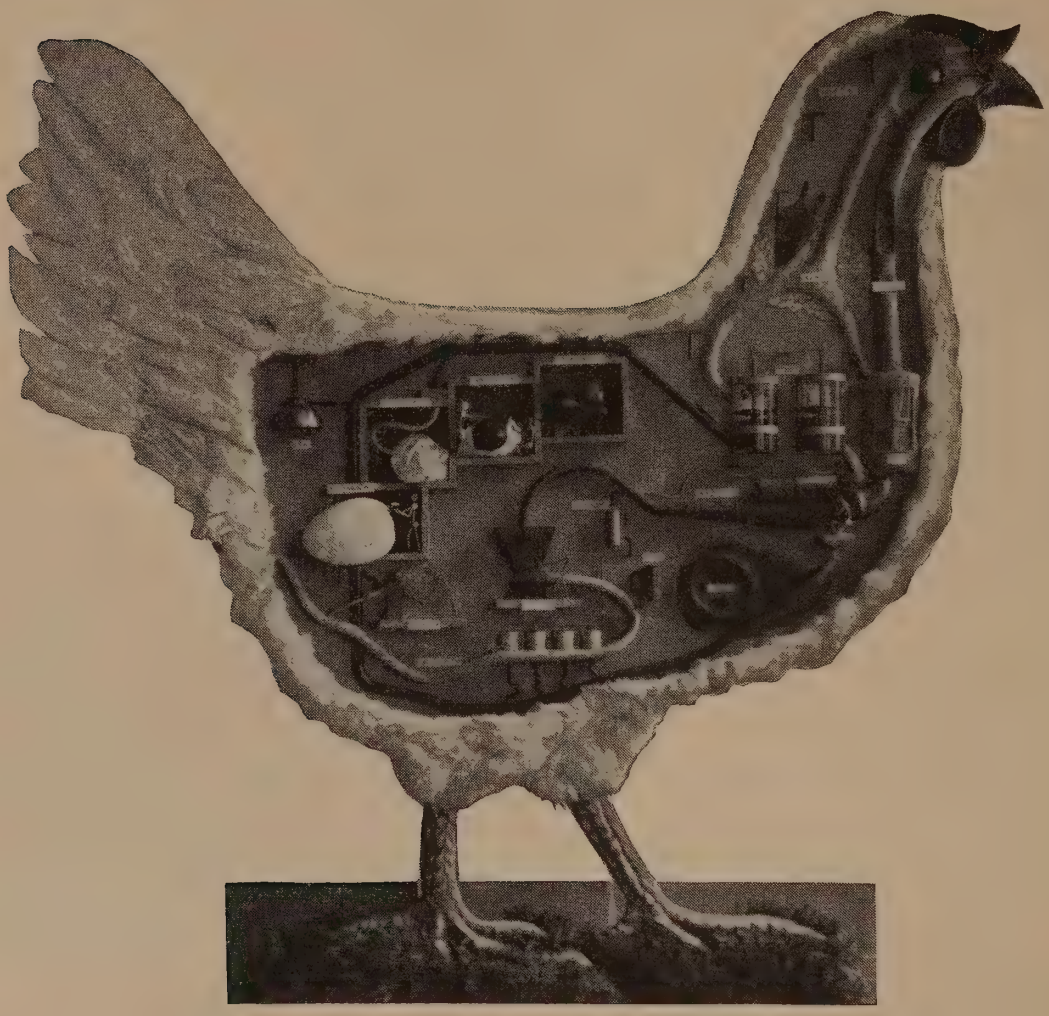
Each bag of ESHELMAN RED ROSE GUARANTEED FEED is sold under a BRAND NAME. The BRAND NAME is important, because it is the manufacturer's guarantee of the quality of the product, and the integrity of the Company behind it; your assurance that the material is exactly as represented; our pledge to respect the confidence and best interests of the user—the thousands of feeders and dealers who have made possible the success and growth of the Company.

THE *Eshelman* PLANTS

Plant No. 1, *Lancaster, Pa.*

Plant No. 2, *York, Pa.*

Plant No. 3
Circleville, Ohio



THIS reproduction of the "mechanical hen" is shown through the courtesy of the United States Department of Agriculture. It was built for exhibition purposes and helps us to better understand how the hen makes eggs.

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RED ROSE POULTRY FEED

feed facts *for* poultrymen